SCIENCE AGORA

Collaborate, Transcend, Create

Science Agora 2022 brings together the wisdom of the people gathered to transcend existing frameworks and assumptions to meet the challenge of creating a better future.

サイエンスアゴラ 2022

Report on Science Agora 2022

Overview of Science Agora 2022

What is "Science Agora" *Agora is ancient Greek for "meeting place"

Science Agora is a generic term for a place connecting science and society, which is open to everyone. It is a forum in which various people promote activities in each region independently by connecting parties involved in different fields, sectors, generations, and nationalities. People gathering in this forum will aim to realize "science harmonized with society" and a "society harmonized with science" through dialogue and collaboration while respecting a diversity of values.

Science Agora activities fulfill these five conditions:

(1) With society and for society
(2) Science related
(3) Self-motivated
(4) Devoted to dialogue with a diverse range of people
(5) Devoted to public dialogue

Theme of Science Agora 2022 : Collaborate, Transcend, Create

Our environment is rapidly changing. Many previously typical situations are becoming atypical. Our world is interconnected, and problems in distant countries can directly impact our lives. Experts suggest that developments in science and technology no longer exist just to overcome inconveniences. Instead, our current era is focused on using these fields to produce novel ideas and create value. To realize a future that enables everyone to live in comfort, we need an awareness of diverse issues and ways of thinking that individuals alone cannot possess. People from all walks of life can provide us with hints for the future of society. What do you think the future of science and technology will be like? Who will it help? What problems need to be overcome to make this happen? We want to begin this year's Science Agora by asking for your thoughts on these matters. We challenge you to create a better future through the combined wisdom of those gathered at the event and by transcending current frameworks and assumptions.

Event outline

■Title: Science Agora 2022

■Dates: [Science Agora Online] Thursday, 20th– Saturday, 22nd October
[Online pre-event] Tuesday, 1st November
[Science Agora On-site (Held in Aomi area, Tokyo)] Friday, 4th– Sunday, 6th November

■Host: Japan Science and Technology Agency (JST)

■Sponsor: Amazon Web Services/ Asahi Kasei/ BHQ Project/ Elsevier/ Gakken/ Kyoto Beyond-SDGs Consortium/ Moderna Japan/ NEC/ Nippon Telegraph and Telephone（NTT)/ ROHTO Pharmaceutical/ Sony Music Entertainment (Japan)

■Collaborator: Fuji Television Network/ Tokyo Waterfront City Association/ Tokyo Teleport Center/ KYOTO Design Lab of Kyoto Institute of Technology (D-lab)/ Wiley/ Yurikamome

■Supporter: Cabinet office/ Ministry of Foreign Affairs/ Ministry of Education, Culture, Sports, Science and Technology/ Ministry of Economy, Trade and Industry/ Science Council of Japan/ Keidanren/ The Japan Association of National Universities /Federation of Japanese Private Colleges and Universities Associations /RIKEN / The National Institute of Advanced Industrial Science and Technology (AIST)/ Japan Association for the 2025 World Exposition

■GlobalPartner: American Association for the Advancement of Science (AAAS)/ China Association for Science and Technology (CAST)/ Department of Science and Innovation, Republic of South Africa/ EuroScience/ Korea Foundation for the Advancement of Science and Creativity (KOFAC)

Event Report (1)

Science Agora Opens in Person for the First Time in Three Years Citizens and Scientists Gather in Odaiba until the 6th

Science Agora 2022, one of Japan's largest science events, kicked off at the Telecom Center Building in Odaiba, Tokyo on November 4. The Japan Science and Technology Agency (JST) hosted the event under the theme of "Bring together, go beyond and create," encompassing a variety of events. It was the 17th Science Agora, but in 2020 and 2021, the event was forced online due to the COVID-19 pandemic, so this was the first on-site event in three years. Citizens, students and scientists gathered over three days through to November 6. Aiming to clarify the expectations and demands of society for the future, the event engages participants in dialogue and deepens exchange. Prior to the event, the Pre-Agora online program took place up to November 1, which saw lively discussions on COVID-related issues.

Science Agora was held in-person again for the first time in three years.
At the "Upcoming highlights presentation" on stage, the passion was immediately obvious.
Telecom Center Building, Odaiba, Tokyo, November 4, 2022

Great anticipation for meeting "face-to-face"

At the center of the venue was the "Agora Stage", set up on the first floor atrium of the Telecom Center Building for the first time in three years. The "Science Agora 2022 upcoming highlights presentation" began at 12.30pm on November 4, the opening day.

Science Agora featured more than 140 diverse events including Pre-Agora. Given the large number of options, this was a presentation for those confused about which ones to attend. Members of the Science Agora Promotion Committee gave an overview of the events and their specific recommendations.

Six of the 11 committee members lined up on stage. Professor Ryoichi Shinkuma, Faculty of Engineering, Shibaura Institute of Technology, and his colleagues spoke about the lively interactions it took to decide on the theme, the hardships of selecting the 140 or so sessions from among the proposals, and their enthusiasm for holding the event in person for the first time in three years.

Atsushi Arakawa, a member of the committee representing the organizers and Director of JST's Department for Promotion of Science in Society, said, "There were positives to holding the event online in the past two years, but I am excited to see an Agora starting where we can meet up person. There are all kinds of events and I hope you enjoy each of them."

Then, the "Heart-pumping science classes with the power of technology!" event took the stage, created with the hope that more children would take an interest in science and become scientists and engineers to support the future of Japan, followed by "Wake up to sleep! Explore the future of sleep and society", looking at better ways of sleeping and resting in our busy modern world.

A "Collaborate, Transcend, Create" sign greets visitors at the entrance of the venue. *Telecom Center Building, Odaiba, Tokyo, November 4, 2022*

Booth dialogue started next day, adding further excitement

From November 5, exhibitions were also held on the 3rd to the 5th floors of the Telecom Center Building. Many of the exhibition booths hosted interactive events, with representatives of the exhibiting organizations talking and interacting with visitors, explaining their topics, which spanned a wide range of scientific fields.

There are also mini-stages on each floor, with nearly 30 family-friendly, interactive events of 90 minutes each including "Let's Imagine: Your Day in the Future" (10:30 a.m. on November 5, 3rd floor), "Let's tackle SDGs from the micro world with a mobile microscope" (2:30 p.m. on November 5, 3rd floor), "Future stories created by games about life with AI" (10:30 a.m. on November 6, 3rd floor), and "Fighting COVID-19 together: Learning and sharing with each other" (2:30 p.m. on November 6, 4th floor).

According to the person in charge of planning Science Agora at JST, this year's "Collaborate, Transcend, Create" theme embodied the desire to challenge those gathered in the shared forum of Science Agora to "create a better future through the combined wisdom of those gathered at the event and by transcending current frameworks and assumptions".

Throughout Science Agora 2022, an "opinion board" stood next to the Agora stage on the first floor. On the board, frank opinions and questions about science and technology were gathered from attendees. There were then analyzed along with the contents of the exhibition events. We used these to try to gauge the expectations and anxieties about science and technology, as well as desires regarding the future.

COVID-19 information...How does society deal with risk?

As part of Science Agora 2022, 30 diverse sessions were held online on October 2, October 20-22 and November 1, attended by people from all walks of life from students and city residents to scientists and policymakers.

In addition to the notable sessions selected by the experts' Recommendation Committee, such as "The science of fora for dialogue: interactive 'Dialogue Guidelines'" (October 20), which explored whether there might be better methods for dialogue than the varied existing ones such as facilitation (effective facilitation of meetings) and environment cafes, and "Changing the World with Molecules: Future Research Topics Created Together" (October 22), sessions dealing with the worldwide COVID-19 pandemic attracted particular interest.

"COVID-19 Miscommunication and Discommunication" held online. *October 20, 2022*

On October 20, we looked back on the various information and communications that intersected at the beginning of the pandemic. A "COVID-19 miscommunication and discommunication" session explored the ideal form of risk communication to eliminate confusion and allow people to choose more appropriate behaviors.

Science writer Akina Horikawa served as the facilitator, and experts in media and journalism took the stage online to exchange analysis and opinions, including former TV anchor and Specially Appointed Professor Kenichi Shimomura of Hakuoh University and Mikihito Tanaka, Professor at Waseda University's Graduate of Political Science and Economics, who also serves as a member of an expert group advising the Ministry of Health, Labour and Welfare on COVID-19.

Professor Tanaka, who was involved in a policy proposal of avoiding the "3Cs" of closed spaces, crowded spaces and close-contact settings to prevent the spread of infection, said, "The difficulty of risk communication is that when the evidence is available, it is already too late. The 3Cs was a very simple message, but at the time, evidence of aerosol transmission was still lacking. However, in the end, it was also well-received overseas."

He also points out that "it is possible to criticize the evidence as suspicious, but risk countermeasures will not work unless we cast off assumptions (when faced with an unknown problem) and become a society that tolerates the risk of being criticized."

Specially Appointed Professor Shimomura is a communications expert who has experienced both providing and receiving of information. "For scientists, there are only two things: scientific or unscientific, and it is important to know that there are things that we do not know yet, things that we will know, things that are 'not yet scientific,' so to speak," he said. He found that when he taught students that "Sometimes it is more realistic that you do not know which is white, and which is black…It become easier for them to take in information."

Vaccine company emphasizes "system able to respond to future mutant strains"

On November 1, as an “Agora eve” special event, Melissa Moore, Chief Scientific Officer (CSO) of US biotech and pharmaceutical company Moderna, gave a lecture entitled "Moderna Meets Mirai". She spoke about the success and potential of the messenger RNA (mRNA) vaccine technology used to vaccinate people all over the world against COVID-19.

Melissa Moore giving an online lecture on the possibilities of mRNA vaccine technology, *November 1*

mRNA acts as translator of the genetic information contained in DNA in the synthesis of proteins. mRNA vaccines harness this characteristic of mRNA. The "blueprint" of the spike protein on the surface of the virus is injected into the body to make proteins in the ribosomes in cells. It is a mechanism that produces more antibodies against spike proteins through the immunity function.

Moore noted that Moderna had already established mRNA vaccine technology to deal with the virus before COVID-19 spread globally, and that she worked with the US National Institutes of Health (NIH) to create a system to rapidly deliver vaccines.

She also said that by applying artificial intelligence (AI) technology to mRNA vaccines, they could be applied to a wide range of drug development, not just viral infections but also various cancers and heart disease, for example. She also emphasized that Moderna has a system in place to respond at any time to new mutant strains that are expected to emerge in the future.

※This report is reprinted from the “Science Portal” comprehensive science website, which provides the latest information on science and technology.
Science Portal: **https://scienceportal.jst.go.jp**

Event Report (2)

"Face-to-face, New Perspectives" First In-person Science Agora in Three Years Concludes

Science Agora 2022 is among Japan's largest scientific events, bringing together scientists and citizens to think about the future. The event concluded on November 6 having completed the full program. This year, we were finally able to hold the event on site in Odaiba, Tokyo for the first time in three years. It consisted of more than 140 sessions and events, including online. Face-to-face discussions and interactive events returned and were very lively.

This was the first Science Agora held in-person in three years. Stage discussions were lively across a variety of events, both hard science and social science. *November 5, Telecom Center Building, Odaiba, Tokyo*

This year marks the 17th time the event has been hosted by the Japan Science and Technology Agency (JST). It was traditionally held in Odaiba, but the COVID-19 pandemic forced it online in 2020 and 2021. This year, it was decided to hold some of the events in person with sufficient infection prevention measures in place. Following online pre-events on October 2, October 20-22 and November 1, Science Agora 2022 was held at the Telecom Center Building (Koto, Tokyo) from November 4-6.

This year's theme is "Collaborate, Transcend, Create." Besides communicating the fun of science and technology and igniting interest in these fields, Science Agora aims to be a place where diverse people can gather to consider the issues surrounding these fields and think about the future. All events except those hosted by the organizers were selected through open ballot. Researchers not only in the natural sciences but also in the humanities and social sciences delivered session and exhibited booths, as well as companies, students, and science museums.

The ribbon-cutting coincided with enhanced exhibition booths and mini-stages, *November 5*

The venue was already packed with attendees at opening time, *November 6*

During Science Agora 2022, in addition to topics related to the state of science and technology and their relationship with society, lively presentations and discussions took place online and on the stage on a wide range of topics such as the garbage problem, sleep, cancer, food, robots, and extraterrestrial life.

Speakers presented their opinions and suggestions, such as, "The mixing of people of different backgrounds and cultures is an opportunity to create and observe new things," "Sustainability will not come about unless it has a solid foundation in the culture that people learn by the time they grow up, and is rooted in the earth and land," and "In order to reduce the distance between citizens and science, it is desirable to incorporate some kind of added value into science that citizens can easily relate to."

Experts were also frank in revealing the difficulty of making their research and findings useful to society: "I feel a barrier to understanding even if the field is slightly different from mine", "Even if I thought I had developed something that was easy to use, it was unpopular with the elderly as 'difficult to understand.' It made me think about what is easy to understand and difficult to understand", "Even if you are good at writing papers, commercialization is difficult. The performance of a product alone was not enough - we faced issues such as safety and whether it could be mass-produced."

The importance of basic science was also reaffirmed. Scientists noted that, "Even if [basic science] is not useful for money or your lifestyle, it is indispensable for human life," "I want to be excited to share my dreams and story with you. This is a fundamental activity that originates from a desire to understand," and "Pure curiosity ultimately creates useful things."

Attendees lined up for demonstrations, hands-on experiences, interactive events, and booths presenting research activities. Exhibitors has meaningful responses, noting, "While we hosted participants from all over the country online, they tended to be passive 'viewers'. It hit me that face-to-face encounters are the way conversations are easily generated", "Not only general visitors, but also other exhibitors stop by, interact and gain new perspectives because we are all in the same place", "It is a valuable opportunity for visitors to directly encounter research, creating opportunities to trigger their interest."

The opinion board in the venue, where people were able to freely leave comments, attracted a variety of perspectives, such as "Science is actually fun," "I realized that it might be interesting to do my own research," and "I was stimulated a lot by my hardened head from going back and forth between work and home." There were also comments that they wanted to make more connections with various fields of science and technology, and that adults also wanted to conduct experiments that are popular with children.

Participants line up for a unique interactive event, *November 6*

Student-led exhibition booths to exchange opinions with visitors also prove popular, *November 5*

EXPO 2025 OSAKA, KANSAI, JAPAN official character Myaku-Myaku rushes out and causes a fuss, *November 6*

A high school teacher in his 40s from Saitama City visiting the event, spoke of the improvements he saw: "Each event is unique, interesting, and attractive, and it was good to learn about many experiments that could be used for our science club." He was photographing a number of booths on his phone for later reference, he said. A 14-year-old male junior high school student from Suginami Ward, Tokyo, said, "I got to see science and technology that I would not normally have a chance to, and I was able to talk with scientists who I would not usually meet. It has expanded my horizons." A 14-year-old male junior high school student from Edogawa Ward said, "It was fun to be able to ask questions casually, and while I was able to encounter science and technology in general, I felt that if you were here for a specific field, you would not find much. I would like to see more events."

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Science Portal: **https://scienceportal.jst.go.jp**

The Event in Numbers

Science Agora 2022 (Annual General Meeting)
Online: October 20 to 22, Agora Eve Event November 1, In person: November 4-6

Participants (as of 17:30 on Nov. 6, the last day) : 8,143

〈Breakdown〉

Attendancees			Total
On-site visitors (Excluding exhibitors)	Online attendees		
	Live stream participants	YouTube archive unique viewers during Science Agora 2022	
1,870	3,168	1,803	**6,841**

Contributors (Excluding Science Agora Secretariat)	1,267
Guests (Excluding online)	17
Press (Excluding online)	18
Total	**8,143**

Total views (as of 17:00, Nov. 30)

Total views (estimated) (Zoom+YouTube)
8,914

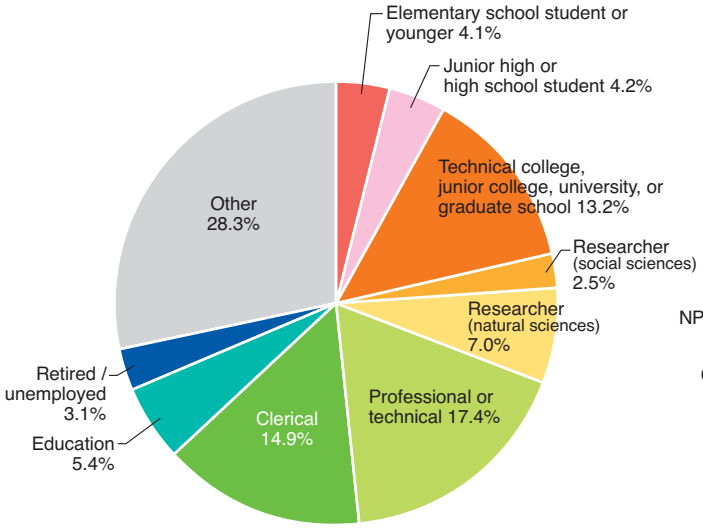
Exhibition Programs : 142

〈Breakdown〉

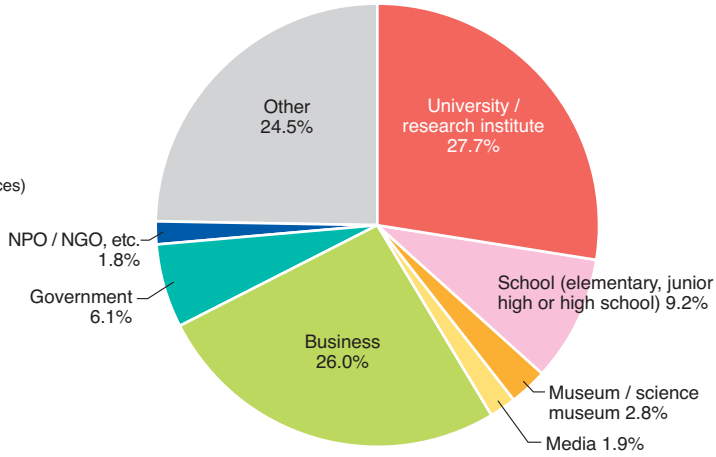
Online	28 events
In-person (Including Agora Eve)	114 events
Total	**142**

Attendee statistics (1) In-person events (based on the attributes of pre-registrants n=1,298)

Occupation

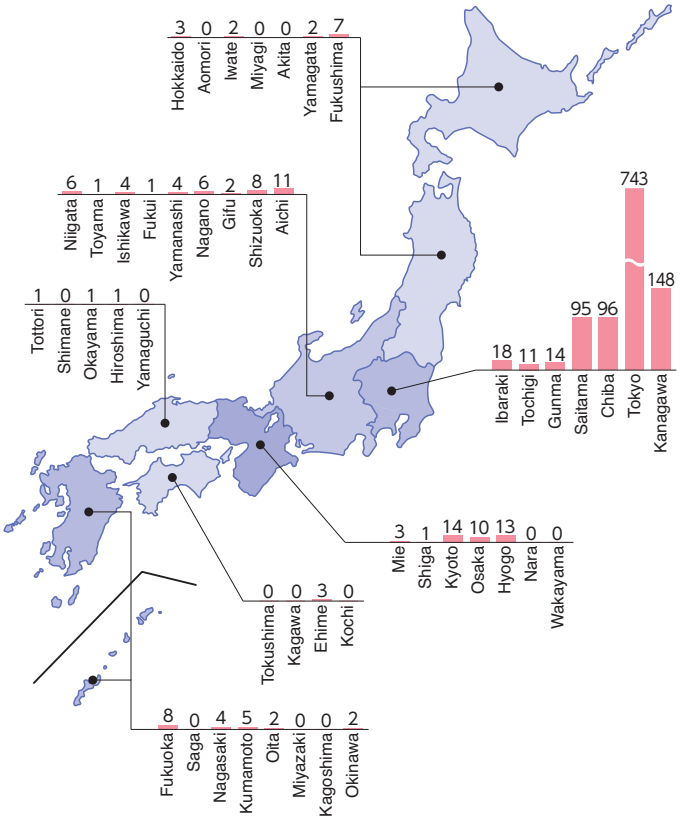


Category of organization



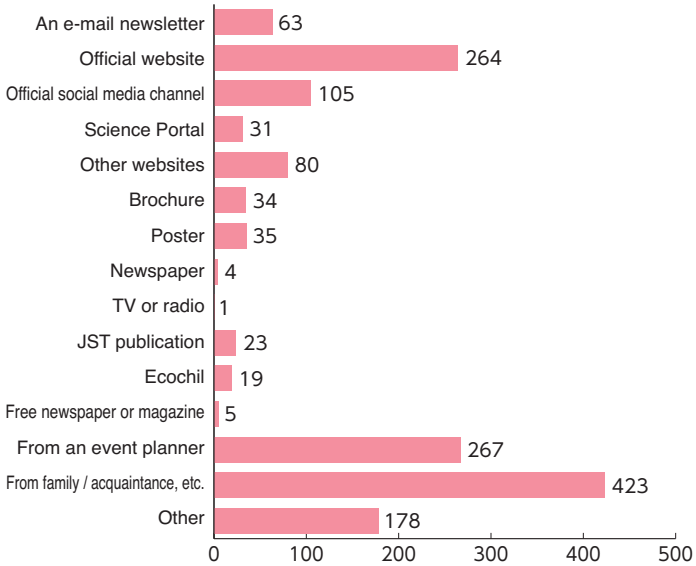
Location of attendance (prefecture)

(people)



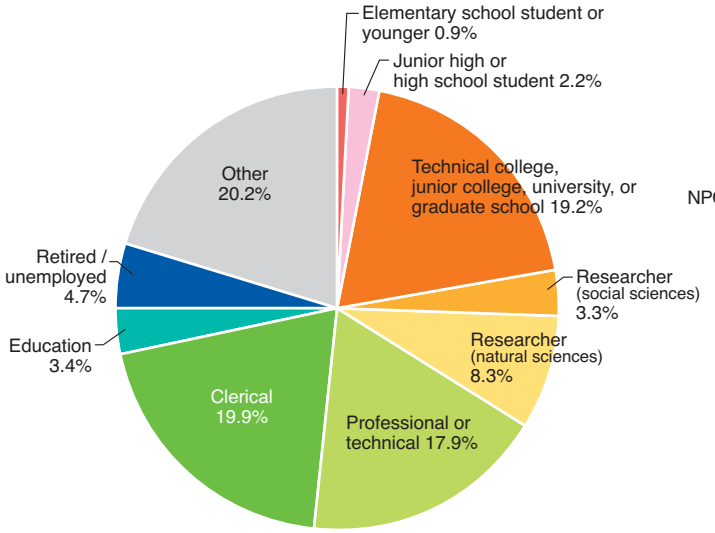
How did you hear about Science Agora 2022?

(Select as many as applicable)

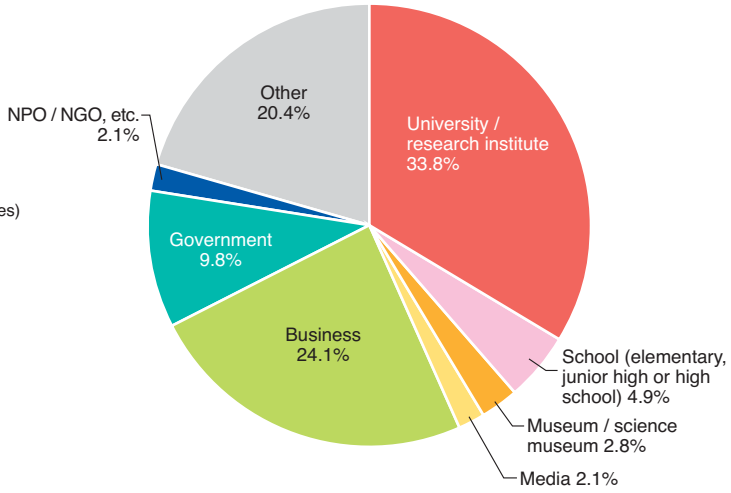


Attendee statistics (2) Online pre-registration (based on the attributes of pre-registrants n=3,207)

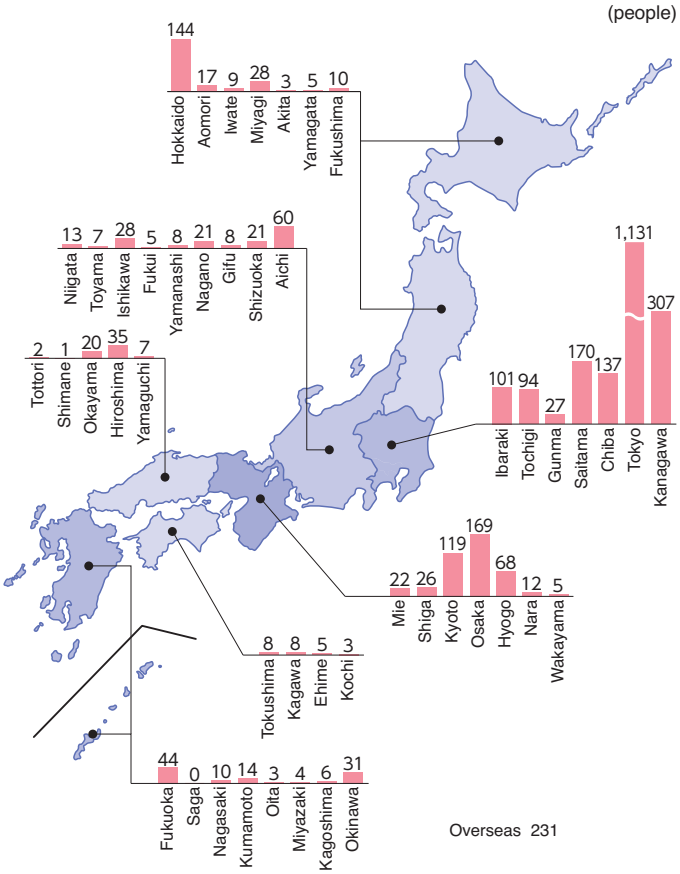
Occupation



Category of organization



Location of attendance (prefecture)



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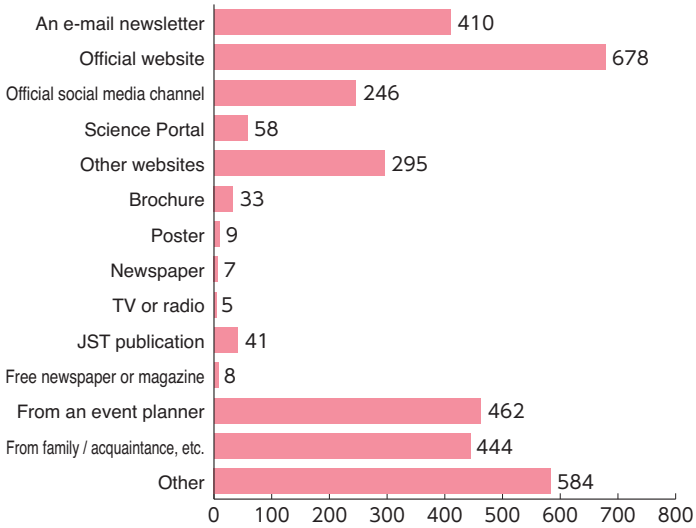
(Select as many as applicable)



Creating a Future for Exciting Inquiry - Thinking about the Future of STEAM Education

Date and time: 16:30-18:00, Saturday, November 5
Exhibitor: Department for Promotion of Science in Society, Japan Science and Technology Agency (JST) / National Museum of Emerging Science and Innovation (Miraikan)

〈**Speakers**〉
Professor Kei Kano Faculty of Education, Shiga University
Maywa Denki design firm produced by Nobumichi Tosa
Hideharu Shukuno Director, Tsukuru-Manabu Kyoto Science Museum / Representative Director of OpEL Co., Ltd. / Representative Director of Medico-tec Co., Ltd.
Yuko Kobayashi Doctoral Student, University of Tsukuba
Ji Eun-seob Teacher, Oita Maizuru High School
Professor Mari Oshima Interfaculty Initiative in Information Studies / Institute of Industrial Science, University of Tokyo

As exploratory learning in high schools began in earnest in April 2022, this session brought together participants to consider the future of STEAM education. Practical examples from those engaged in STEAM education and related initiatives inside and outside schools presented. Through a questionnaire and dialogue conducted during the session, high school students, the targets of this teaching, discussed how it should be done in the future and how to enliven it.

Session Report

The Future of STEAM Education [Part I] For Exciting Inquiry, There is No One Right Answer – From Science Agora 2022

Science Agora is one of Japan's largest science events bringing together scientists and citizens to think towards a better future. A series of sessions to consider the future of STEAM education, which is now being put into practice in schools, was held in Tokyo and Osaka. In Tokyo, a session entitled "Creating a future for exciting exploration" was held, introducing case studies of STEAM education and discussing its future possibilities in response to the full-scale start of inquiry learning at high schools this year.

The Science Agora 2022 venue of "Creating a future for exciting inquiry - Thinking about the future of STEAM education" (Odaiba, Tokyo)

At the beginning of this session held on November 5 at Science Agora 2022 hosted by JST, Dr. Kei Kano, a professor of education at Shiga University, explained the purpose of the event. Of the new term "STEAM education," which emphasizes cross-curricular inquiry and stands for “science, technology, engineering, the arts (fine arts and liberal arts) and mathematics”, he told the audience he wanted them to “keep it in mind first of all”.

Curiosity first, technology later

Nobumichi Tosa of Maywa Denki holds an Otamatone

The first speaker, Nobumichi Tosa of design firm Maywa Denki, gave a presentation entitled "The Power to Give Shape to Ideas". Tosa told the story of the development of one of his "nonsense machines", the "Otamatone," an electronic musical instrument shaped like a musical note. The Otamatone player can change the tone produced by the instrument by altering the shape of the Otamatone’s mouth. Having always been interested in the voice, Tosa began development of this instrument in exploring the mechanism of vocal range and the magical properties of the voice.

Initially, he used his own voice but later he created "Seamoons," robots that “sing” by vibration of their artificial vocal cords. While trying to improve the tone-deaf robot, he was able to create a somewhat human effect, such as vibrato and strangled sounds, by intentionally leaving imperfections in the control of the motor. He recalled, "I realized that trying to do something about the imperfect physical mechanism of the human body led to the fun of singing." Of his own experience of exploration, he said, "Curiosity about the voice came first, and technology came later".

A place in the city where you can pop in for some science

Hideharu Shukuno of the Kyoto Machiya Science Museum

The second speaker was Hideharu Shukuno, director of the Tsukuru-Manabu Kyoto Machiya Science Museum, a science museum housed in a traditional Kyoto *machiya* townhouse. He introduced his efforts so far to support the individual creativity by providing a place for science communication in the city where anyone can freely learn, teach, and create. The 90-year-old townhouse was renovated to allow visitors to experience science through exhibits that awake visitors to the light and sound around them.

The museum was also working on STEAM education as a program and has held manufacturing seminars, workshops in mobile science museums, and online factory experiences. He aims to develop people with independence who can "question, think, and act" on their own. He also talked about unique ideas such as online factory tours that take advantage of Kyoto's characteristics, such as the workshops of traditional metalworkers and the *Kyo-yuzen* textile industry, and manufacturing seminars that link science with economics and money. In the future, Shukuno expressed his aspiration to "increase the number of *machiya* science museums where people can just drop by". He also hopes to "create a group of engineers who support the creation of equipment for fun learning" at the Machiya Science Museum.

Encouraging students to come up with their own answers

As a practical example from a school, Yuko Kobayashi, who is enrolled in the doctoral program of the Graduate School of Comprehensive Human Sciences, University of Tsukuba and Oita Maizuru High School teacher Ji Eun-seob introduced their jointly developed exploratory activity curriculum for high school students, "Mai STEAMs". The aim was to encourage students to think of their own answers by not giving the answer, with the aim of having students experience the true nature of science that it requires a lot of data. They used the example of a task to verify the relationship between the length of a blowgun tube and the range of the dart.

In a task to foster design thinking, students experienced manufacturing while cooperating with each other with the aim of creating a prototype of a "link mechanism" that performs certain actions. At the session, kits of the link mechanism were distributed to the participants, giving them time to take on the challenge. Scientists also accumulate scientific knowledge through the cycle of first thinking on their own, then discussing with their laboratory mates, and presenting their findings at academic conferences. "The students can see that science is a social activity that advances as a result of communication by scientists," Kobayashi said.

Yuko Kobayashi of the University of Tsukuba and Ms. Ji Eun-seob of Oita Maizuru High School talk about the challenges of the "link mechanism"

Experience learning that goes beyond normal school subjects at an airplane factory

The final speaker was Dr. Mari Oshima, a professor at the University of Tokyo's Interfaculty Initiative in Information Studies/Institute of Industrial Science, who presented practical examples from the university. As a researcher in mechanical engineering, she became involved in STEAM education while holding workshops and developing teaching materials thinking about how to convey the fun to be found in this field.

Dr. Mari Oshima, University of Tokyo

As an example of working with industry, she noted the "Airplane Workshop" held for junior high and high school students in collaboration with Japan Airlines. In addition to students touring an actual airplane factory and listening to the stories of mechanics, pilots, and cabin attendants to learn about their work, Dr. Oshima actually designed airplane wings in a portable wind tunnel that she had

developed so that they could learn about the principles of flight, such as lift and drag. "I think this was a place to foster understanding of how physics and mathematics taught in school classes are connected to society," she said. "There is an increasing number of things in the world where there is not just one answer, and we hope that they are able to explore further while experiencing a learning path that goes beyond school subjects".

Da Vinci was a "STEAM" thinker

In the discussion, questions from viewers deepened the debate. In response to a question about the role and significance of the "A" (arts) in STEAM, Mr. Tosa of Maywa Denki raised the question, "Are there not two poles of art?" Although there is a process of self-driven exploration by the individual, such as painting a picture, and a process of presenting the work for the public to assess its meaning, his analysis of the current situation was that various methods of expression found in art are used to convey science in an easy-to-understand manner. On the other hand, he talked about the difficulty of teaching self-driven exploration, and reflected on his own experience of freely pursuing artistic endeavors.

Ms. Ji emphasized that "the input is also important in art." For instance, when making a robot hand, it is necessary to carefully observe the structure of the human thumb, and she mentioned that Leonardo da Vinci also developed anatomical sketches in pursuit of scientific correctness. Mr. Tosa replied, "Da Vinci may have had a stage where he made a sketch and then checked it," and pondered that da Vinci, who drew scientific anatomical sketches of fetuses and also depicted the scene of the Annunciation, may have been a "STEAM" thinker.

Regarding a suggestion from the audience that both observation of natural phenomena and self-exploration tended to be lumped together as art, Kobayashi says that rather than simplifying, "Knowing the achievements and ways of thinking that one field has independently developed and looking at other fields highlights the strengths of each field."

Regarding the tendency to seek one correct answer, Dr. Oshima pointed out that even if scientifically derived answers were true, that does not mean they could necessarily resolve a social issue. "It is also important to accept diverse ideas," she said. Mr. Shukuno said that everybody seeks the one solution, but, he concluded, “we should question whether that is enough. Everybody should have an answer."

※This report is reprinted from the “Science Portal” comprehensive science website, which provides the latest information on science and technology.
Science Portal: **https://scienceportal.jst.go.jp**

Related Event Reports

The future of STEAM education [Part II] There is momentum toward the " lifelong learning society" From Science Agora in Osaka

https://scienceportal.jst.go.jp/explore/reports/20221219_e01/index.html

Science Agora Online: Sunday, October 2nd, Thursday, 20th – Saturday, 22nd October

Sunday, October 2

02A13	**Live session: Science*Art, to you who create the future**	Japan Science and Technology Agency (JST)

Thursday, October 20

20A13	**Discussion about mis- & dis- communication during COVID-19 pandemic**	Akina Horikawa (Science Writer, Fellow of Knowledge Mobility based System Inst.)
20A14	**The Science of Dialogue: Participatory "Dialogue Guidelines"**	Japanese Association for the Advancement of Science (JAAS) Social Collaboration Working Group
20A16	**Chemistry Opens the Door to a Possible Future**	Institute of Industrial Science, the University of Tokyo
20A17	**Comparative study of DX between three unique cities in this world**	-ShanghaiTech University-Kyoto University, Department of Social Information-University of Milano
20A19	**the future next to us ~Breaking the Boundary Between Citizens and Scientists~**	Jurisprudence & Science Vtuber team Montparnasse
20B14	**Can research resource sharing democratize R&D?**	Co-LABO MAKER
20B16	**The Fun in Learning**	APARA (Asia Pacific Assistive Robotics Association) / Japan Science and Technology Agency, Singapore Office
20B17	**Talks on the universe, subatomic particles, disasters, natural resources and archaeology through international dialogue.**	Embassy of Hungary, UTokyo-MUOGRAPHIX
20B19	**Does Empathy Help Us Coexist? – Cultural and Scientific Perspectives**	Miraikan - The National Museum of Emerging Science and Innovation

Friday, October 21

21A13	**Foods in the future: the development situation of genome-editing regulations, patents and technologies overseas**	The National Agriculture and Food Research Organization
21A14	**National Geographic Society Grant Opportunities: illuminating and protecting the wonders of the world**	National Geographic Society (NGS)
21A16	**How to make decisions for a sustainable future**	Subcommittee on institutional design for sustainable development, Science Council of Japan
21A17	**Animal Welfare for Edible Insects**	entomo protein, Higashiosaka Junior College, Insect Science Research Center
21A19	**How will you enjoy the future society where everyone can augment their abilities with cybernetic avatars?**	Moonshot Goal 1, Department of Moonshot Research and Development Program, Japan Science and Technology Agency
21A21	**Innovating out of Crisis**	Global Federation of Competitiveness Councils, Japan Science and Technology Agency
21B16	**World Science Forum in Cape Town: Social justice and the science for the future?**	JST, Young Academy Science Council of Japan, South African Embassy in Japan, Embassy of Hungary

Saturday, October 22

22A10	**Forensics Challenge! See, touch, and communicate beyond words!**	Forensic Communication Design Institute
22A13	**Let's TAN-Q**	TAN-Q Olympiad Comittee
22A14	**Digging deeper into regional issues with open data!**	STEMLeaders
22A16	**Science can create the future transfering borders and genders.**	Japan Science Olympiad Committee
22A17	**Wild game meat for whom and for what?**	Mononomi Lab. (Ikimonono mikata Lab.)
22A19	**Changing the world with molecules! Let's create future research themes for everyone**	Institute of Transformative Bio-Molecules (WPI-ITbM), Nagoya University
22B10	**Let's transform the fascinating science behind Muography into art!**	Embassy of Hungary, Dr. Kenji Sumiya, Dr. Hiroshi Nakajima
22B13	**Are we miles apart? Let's enjoy DIY science together over the screen!**	Japan Association for the 2025 World Exposition / Osaka Science Museum Volunteer "SCIENCE de DOYA"
22B14	**The value you see in monitoring the living things.**	Miraikan - The National Museum of Emerging Science and Innovation
22B16	**Ocean Plastic Pollution, how should we deal with it?**	Embassy of the Republic of South Africa in Tokyo, Japan
22B19	**Let's imagine and co-cureate a future cybernetic avatar society in metaverse**	VRC Science Assembly

Online pre-event: Tuesday, 1st November

01A18	**Moderna Meets Mirai**	Moderna Japan
eve	**Ask the contributors about the key points of exhibition or session planning**	JST Science Agora Secretariat

Science Agora On-site: Friday, 4th – Sunday, 6th November

Booth, Telecom Center Building 1F

From Friday, November 4 to 6th Sunday

101	**Odaiba 100 Papers**	JST Science Agora Secretariat, Center for the Promotion of Interdisciplinary Education and Research (Kyoto University)
102	**Experience the world of"Yuru Music" with "Yuru Musical Instruments" that anyone can play right away!**	Sony Music Entertainment (Japan)(World Yuru Music Association)
103	**"Muography" - Cutting-edge technology and its artistic interpretation.**	Embassy of Hungary, Dr. Kenji Sumiya, Dr. Hiroshi Nakajima
104	**A FASHION DESIGNER MEETS SCIENTIST**	Ema Rie
105	**Cloth & Paper Actuation ~Imagine what happens when the cloth & paper moves~**	Yuki FUNABORA (Nagoya University), UNIVERSITY of CREATIVITY, Kawaguchi Electric Works.
106	**Study for Food Properties Based on Interfacial Chemistry**	Kawano Lab, Inumm, Diamond Brewing
107	**What is the science and technology dialogue with the public that is now required?**	Masanori Onishi, Hiroyo Fujita, Testuya Shirai (Kyoto University Research Administration Office)
108	**Next network society in 2030**	NEC
109	**World Science Forum in Cape Town: Social justice and the science for the future**	Japan Science and Technology Agency, Embassy of Hungary Tokyo, Embassy of the Republic of South Africa in Japan
110	**New Experience, New Discoveries from EU-Japan Research Collaboration**	Delegation of the European Union to Japan
111	**future medical**	ROHTO Pharmaceutical
112	**Shear your opinions**	JST Science Agora Secretariat, Cooperation by SUNDRED

Agora Stage, Telecom Center Building 1F

Friday, November 4

4-1A12	**Science Agora 2022 Highlights introduction**	JST Science Agora Secretariat
4-1A14	**A classroom for science that shakes the heart with the power of technology!**	Kazumasa Yamazaki The Institute of Professional Engineers Japan Science and Technology Promotion Committee
4-1A16	**Wake up Japan! –The Future of Sleep and Society–**	ERATO Ueda Biological Timing Project

Saturday, November 5

5-1A10	**What kind of planet is our Earth? –Exploring the Earth through collaboration of sciences**	Coordination committee for IYBSSD, Science Council of Japan
5-1A12	**From School to Society, Collective Action for Cancer Education!**	CancerX
5-1A14	**co-creating black hole research in the future**	ACADEMIJAN
5-1A16	**RESEARCHER's OGIRI –Let's Bring the Cartoon World to the Real Life Together!–**	Arclev × AASN × CIC Tokyo

Sunday, November 6

6-1A10	**Our "Future of Food" –Thinking from History, Science and Culture**	GAKU-IN by SUNDRED × JST
6-1A12	**Programming as an Art**	JJPC Executive Committee
6-1A14	**xDiversity in Science Agora 2022**	JST CREST xDiversity
6-1A16	**Considering the Present and Future of Robots and Humans with "Time of EVE: The Movie"**	LeaL

Booth, Telecom Center Building 3F

From Saturday, November 5 to 6th Sunday

301	**Let's discuss the future of snow in Japan and that in the world**	The Japanese Society of Snow and Ice, Kanto-Chubu-Nishinihon Branch
302	**Let's assemble a model of the Electric Vehicle to learn about "Carbon Neutral"**	Young Chemists of the Professional Engineers, Japan
303	**The Future of Nitrogen–Circulating Society**	The University of Tokyo, Moonshot Nitrogen Recycling Society Project
304	**Development of handmade games to study biology or chemistry effectively**	Department of Applied Bioscience, Kanagawa Institute of Technology
305	**wonderful! Colorful Flower Pattern –Paper Chromatography**	Science a la carte ecole (Osaka Institute of Technology)
306	**Power of Materials × Emerging the Future**	National Institute for Materials Science (NIMS)
307	**Let's experience ppm –From plastic bottles to the earth–**	Tokyo University of Agriculture and Technology museum support student team musset
308	**Advancing towards the realization of fusion energy!**	National Institutes for Quantum Science and Technology Fusion Energy Directorate
309	**"Hydrogen" : A key to realize Carbon Free Future**	Japan Atomic Energy Agency

310	**Social innovation that college students are seriously working on!**	STEMLeaders
311	**Let's enjoy the wonder of sound and make Mr.Barking Doggy!**	Japanese Society of Science Books for Children
312	**Making centrifugal governor which controls electric power.**	The institution of Professional Engineers, KEIO
313	**Fly to the future! Hydrogen toy rocket**	Gakken
314	**Touchdown Challenge!**	Okayama Prefectural Tamano High School Science Team
315	**What "science" would you like to share with extraterrestrial intelligence?**	Eito
316	**What Accelerators Have Brought to Us: In the Past and to the Future**	High Energy Accelerator Research Organization (KEK)
317	**The Future Created by the ILC**	Bureau of ILC Promotion Iwate Prefecture Government
318	**Build your dream deck! Bridge maintenance management card game!**	Japanese Congress for Infrastructure Management (Citizen participation forum)
319	**WISH TREE PROJECT with MATH**	LAL-LAL
320	**Wonders of Space and Shape : Let's Play Tessellations!**	Japan Tessellation Design Association
321	**–Think & Play– Puzzle Square**	ASOBIDEA
322	**Enjoy learning about scary disasters**	Interesting Science Experiment Club (NIED)

Mini Stage, Telecom Center Building 3F

Saturday, November 5

5-3M10	**Let's envision! A day in the future for yourself!**	SciREX project : Co-creation between government and academia in the formulation of R&D strategies for 'future society'
5-3M12	**Co-creating the Future with SDGs Green Map**	SDGs Science Shop of the Laboratory of Regional Environmental Policy, Azabu University
5-3M14	**Let's challenge SDGs and reconsider it from the micro world with a mobile microscope**	Life is small Projects
5-3M16	**You are the star of SIENCE AGORA**	Forest of Science Radio Production Team.

Sunday, November 6

6-3M10	**Let's create a future story of living with AI through a card game!**	RinGo Lab. & Shineha Lab., Jissen Women's University
6-3M12	**Radiation Lurking Around us ~Considering our Environmental Problems From Space~**	Nitobebunka Junior High School Science Lab
6-3M14	**Young people design the future of depopulation society as their own!**	STEMLeaders
6-3M16	**Research Pitch Contest GENSEKI ~Agora Special Edition~**	Students association BEAST

Booth, Telecom Center Building 4F

From Saturday, November 5 to 6th Sunday

401	**A project to connect you and your family's thoughts and feelings**	#Medical Eco (Doshisha University, faculty of commerce, YOKO URYUHARA LABO the 7th)
402	**Thinking and Creating Our Future of Brain Healthcare**	BHQ Project
403	**Godzilla Bacteria Project**	iGEM TOYAKU
404	**Silkworms and Silk: Spinning the Thread of the Past, Present and Future**	Jutoku High School Science Club
405	**Let's Try to Discover Wonder and Emotion!**	Saitama Science Partnership Project
406	**The Microorganisms: Unexpected Teachers for Tomorrow's Challenge?!**	Mathematical and Physical Ethology Laboratory, Hokkaido University
407	**What we can do in order to reduce food waste**	Asa Kozuki (School of Interdisciplinary Science and Innovation, Kyushu University)
408	**Let's make Nyoki-Nyoki for carbon neutral society –First steps toward 2050–**	Kyoto Beyond-SDGs Consortium
409	**The Arctic is the frontline of climate change and global warming! Let's think about the Arctic, so far yet so close.**	Arctic Challenge for Sustainability II (ArCS II)
410	**Starting Science with Creative Activity**	UTaTane
411	**Insect production toward a circular food system**	iF3 (Insect Science for Food, Fishery and Farming of the Future)
412	**Biodiversity and the alien species –Protecting the richness of the regional nature–**	The Japan Biodiversity Association Mizumoto Nature Project
413	**Our lives and the nurturing ocean –think about the ocean and SDGs–**	The Oceanographic Society of Japan, Ocean Literacy and Education Panel
414	**Global Warming from the Ocean**	Kumamoto Prefectural Amakusa High School Science Club

415	**The world of the energy-saving industry learned from the ultra-deep-sea creature**	Hideki Kobayashi (Natural Environment Utilization Development)
416	**Moderna Meets Mirai**	Moderna Japan

Mini Stage north side, Telecom Center Building 4F

Saturday, November 5

5-4Mn10	**"Science Lover" Podcast Public Recording! Delving into the Minds of Scientists with Conversation and Experiments**	LeaL
5-4Mn12	**STS Statement Science Session**	Center for Science, Technology and Innovation Policy Studies
5-4Mn14	**Collective Intelligence and Artificial Intelligence**	Baba Lab, University of Tokyo

Sunday, November 6

6-4Mn12	**Create Your Own Imaginary Friend to Develop Your Creativity**	Alternative Friend Production
6-4Mn14	**To confront the coronavirus, learning and sharing together**	Life & Bio plaza21

Mini Stage south side, Telecom Center Building 4F

Saturday, November 5

5-4Ma10	**Master manipulators of science fascination –talk event and live streaming**	Japan Science and Technology Agency (JST)
5-4Ma12	**Can Japanese science and technology recover with digital transformation in research?**	High Energy Accelerator Research Organization
5-4Ma14	**Children's Science Olympiad Parents and children challenge Galileo**	Niconico Science Labo
5-4Ma16	**Dialogue on the Future of STEAM Education**	Department of Promotion of Science in Society, Japan Science and Technology Agency & Miraikan

Sunday, November 6

6-4Ma10	**How do you communicate about scientific topics? –interactive presentation about 20 years of Science Communication–**	Former Science Communicators at Miraikan
6-4Ma12	**STI for SDGs; Solving social issues and contribution to SDGs with Science, Technology, and Innovation**	Japan Science and Technology Agency / Department for Promotion of Science in Society
6-4Ma14	**Communication design triggered by the installation of sanitary products**	My Life Lab.
6-4Ma16	**What would you do,if you know the animal mind you can eat?**	Sleepless Nights for Animals

Booth, Telecom Center Building 5F

From Saturday, November 5 to 6th Sunday

501	**Wall Walking Experience ~become a Gecko!~**	Keio University Graduate School of Media Design
502	**in time become snowman**	Konan University
503	**Growing Stilts –The Tale of the Bamboo's Growth–**	Keio University Graduate School of Media Design
504	**Vivid Ground Generator –Haptics to enjoy VR space with feet–**	Chuo University Faculty of Science and Engineering
505	**Sodate Typhoon-kun**	Salesian Polytechnic
506	**SAKE Brewing Simulator (Legal!!)**	Keio University Faculty of Science and Technology
507	**"Te"mpura**	Tohoku University Research Institute of Electrical Communication
508	**Mechanical Brain Hacking:The Conversion Experiences of One's Own Brain and Body System Using Robotic Avatar**	The University of Tokyo Graduate School of Interdisciplinary Information Studies / Graduate School of Science and Technology
509	**Rustle**	Cnam-Enjmin
510	**The ultimate hourglass experience**	Keio University Graduate School of Media Design
511	**Mountain Accident at Home!**	University of Aizu A-PxL
512	**MEcholocation**	Gifu University Faculty of Engineering
513	**Introduction to Molecular Robotics**	Ryuma Shineha, Ken Komiya, Masahiro Takinoue, Akihiko Konagaya, Ken Kawamura, Kohei Takeda, Sho Morishita
514	**Let's think about communication form with electronic fireflies.**	National Institute of Technology, Matsue College
515	**Let's open treasure chests with magic sticks!**	asagao project × iBou project
517	**Dissecting morphogenesis via PC simulation**	Karada engineering
518	**Enjoy programming with SkyBerryJAM**	Nittetsu Hitachi Systems Engineering

519	**Let's Watch, Make, and Catch Invisible Molecule!**	Society of Computer Chemistry, Japan
520	**Beyond "I can't"**	Fuji high school & junior high school
521	**Futures Literacy**	Kawaijuku Future Learning Program / The Japan Research Institute, Limited. Future Design Laboratory
522	**Workshop with researchers about future technology and our life**	A-Co-Labo
523	**Co-creating our future visions towards 2045 / 55**	Research group for S&T Trends and Foresight (National Institute of Science and Technology Policy (NISTEP))
524	**Build our future with cloud computing**	Amazon Web Services

Mini Stage, Telecom Center Building 5F

Saturday, November 5

5-5M10	**Cyber Physical Tour with 2D Barcode**	AI Technology Consortium : AITeC, AIST
5-5M12	**Why are there so few women in STEM in Japan today?**	YAMADA SHINTARO D&I FOUNDATION
5-5M14	**Why we need to have a multilateral collaboration? And what we need to establish it.**	Prof. Kaoru Endo Prof. Akihiko Shibahara Mr. Makoto Yuasa Prof. Naoki Miyano and more...

Sunday, November 6

6-5M10	**100 Questions for Top Researchers**	JST Exploratory Research for Advanced Technology (ERATO)
6-5M12	**Envisioning Futures: Navigating the research landscape with senior women researchers.**	Elsevier, RIKEN
6-5M14	**Forum for Promoting Girls' Enrollment in Sciences**	Japan Science and Technology Agency
6-5M16	**How do you communicate about scientific topics? –interactive presentation about 20 years of Science Communication–**	Former Science Communicators at Miraikan

Miraikan

Sunday, November 6

6-7Mi13	**The 4th Brilliant Female Researchers Award (The Jun Ashida Award) –Awards Ceremony**	Japan Science and Technology Agency (JST)

Science Agora 2022 collaborative projects

・Implemented 7 collaborative projects in 2022

The Science Agora Vision

The vision sets forth the long-term objective that we wish to make through the Science Agora.

A future woven through dialogue between science & daily life

Science and technology have developed in parallel with wealth and power in the 20th century. However, in the face of limited resources on Earth and growing strain on the world, we are now beginning to see the limitations of science and technology. In particular, as we make the transition from a growth society into a mature society, the Japan of today is confronted by many problems and it has become extremely difficult to see ahead into the future. Therefore, we felt that a space was needed where relevant stakeholders could come together to consider the future of science and society, respecting the views of others, and create a future. We hope to foster such a culture. Furthermore, there are diverse attitudes and approaches depending on the country/region and culture, and we hope to explore methods that are unique to Japan.

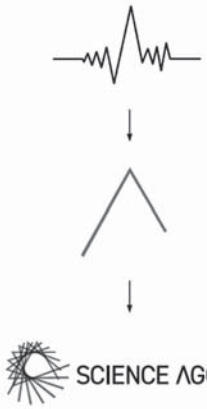
[Key points]

①We emphasized not only "creating a space," but also the approach of collaborative thinking to create the society of the future.

②The concept embedded in "daily life": The focus may be on the daily lives and the ways individuals live their lives, but we believe that this also leads to consideration of society as a whole.

③The concept embedded in "weaving": The importance of exploring methods that are unique to Japan for the creation of a future society. It calls to mind the image of spinning thread - a process of creating harmony in the sense of bringing short, thin, disjointed fibers together, gradually building up and creating something meaningful rather than taking a single leap all at once.

The story behind the brand logo



The moment of discovery or revelation brings enormous joy. This logo represents the feeling of that moment. Showing one element replicated and linked with other elements, it is the symbol that shows the full breadth of many elements gathered in one place. Its imperfect form shows that the future is still under development. It expresses the enormous power of dialogue and shared discoveries to create the future.

Science Agora 2022 Promotion Committee

Chair **Masaharu Shiozaki** (Vice President of JST)

member **Masahiko Inami** (Professor, Research Center for Advanced Science and Technology, The University of Tokyo; Research Supervisor, JST ERATO Inami JIZAI Body Project)

member **Mari Oshima** (Professor, Interfaculty Initiative in Information Studies/ Institute of Industrial Science, University of Tokyo; Director, Office for the Next Generation (ONG))

member **Yoko Kamimura** (Chief Evangelist/ Community Designer/ Partner, SUNDRED Corporation)

member **Kaede Sari** (Consultant, NAD Lab, Nikken Sekkei Ltd.)

member **Ryoichi Shinkuma** (Professor, Computer Science and Engineering, Faculty of Engineering, Shibaura Institute of Technology; Representative of MEIS Society)

member **Shoko Takahashi** (CEO, Incubion Inc.)

member **Tatsuya Honda** (Ontenna Project Leader, Future Society & Technology Unit, Fujitsu Limited)

member **Taichi Masu** (Assistant Professor, Harris Science Research Institute, Doshisha University)

member **Atsushi Arakawa** (Director, the Department for Promotion of Science and Society, JST)

member **Yuko Morita** (Principal Investigator (Science Communication) Miraikan, National Museum of Emerging Science and Innovation Office of Strategy)

As of November 2022 ※Titles omitted

Science Agora 2023

The event is to be held again in 2023

https://www.jst.go.jp/sis/scienceagora/

Science Agora 2022

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