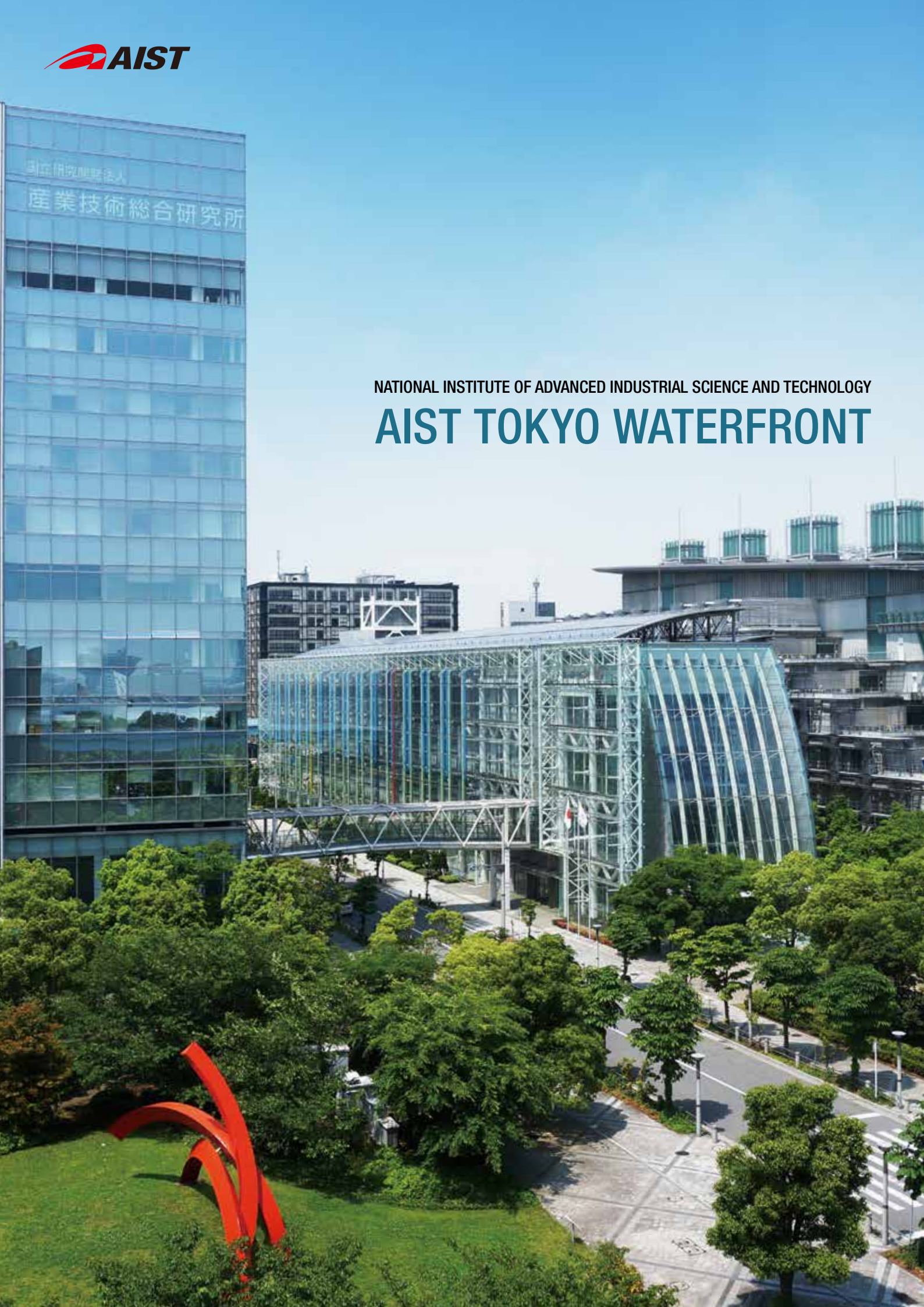
AIST



NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY

AIST TOKYO WATERFRONT

Towards a Global Center of Excellence for Integrated Research For the Realization of a Green and Digital Society

Greetings

Director-General,
AIST Tokyo Waterfront
Dr. HANAOKA Takaaki

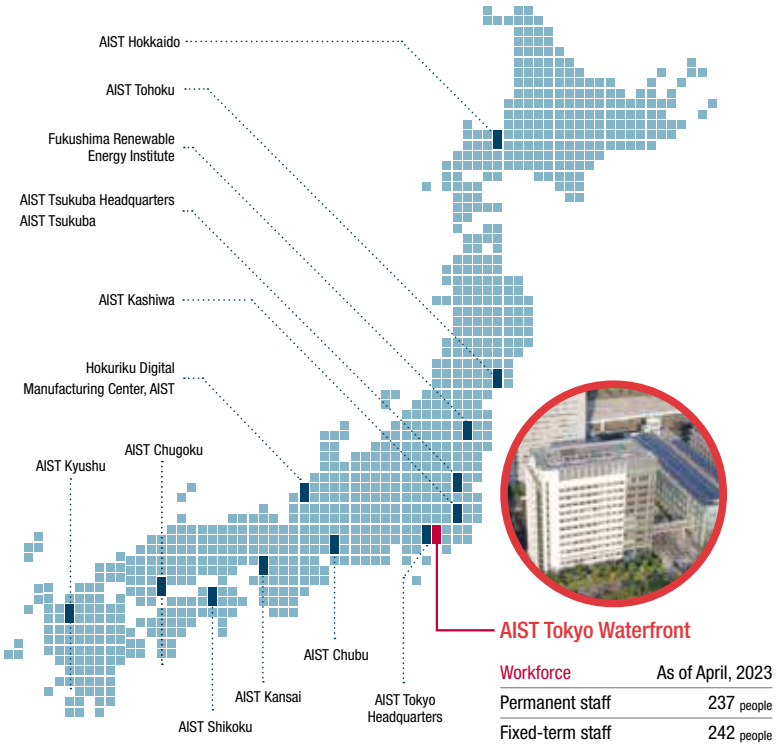
AIST Tokyo Waterfront, one of the research bases of the National Institute of Advanced Industrial Science and Technology (AIST), was established here at the Tokyo Academic Park in Waterfront when AIST was restructured in 2001. The Bio-IT Research Building and Cyber-Physical-System (CPS) Research Facility were built in 2005 and 2018 respectively to expand AIST's only research base located in Tokyo's metropolitan area.

AIST Tokyo Waterfront plays the role of an open innovation platform as an "international joint research center for artificial intelligence (AI) and zero emissions research" by taking advantage of its geographical convenience of being located in Tokyo. In addition to AI and zero emissions, we are promoting integration with various research fields, mainly in cyber physical security, industrial CPS, digital architecture, and cellular & molecular biotechnology. Through these efforts, we aim to realize a green and digital society.

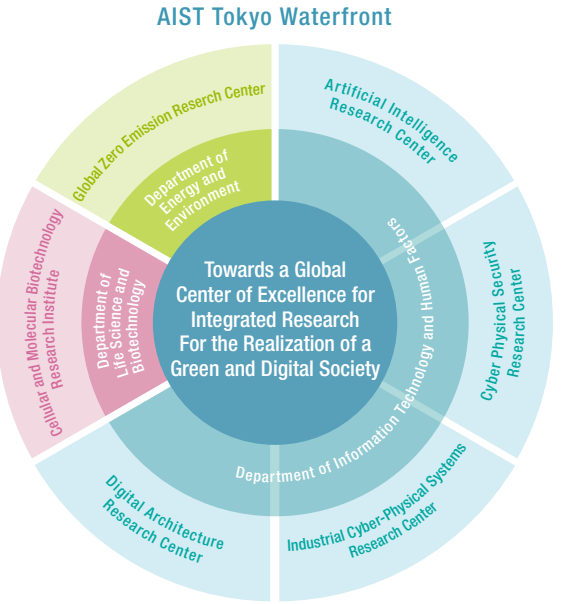
The number of researchers at the AIST Tokyo Waterfront is the second largest among AIST's research bases, behind AIST Tsukuba. AIST Tokyo Waterfront is now the most active international and cooperative research base in AIST, as it attracts more industry and university researchers as well as international researchers compared with the average research base in AIST. In addition, we have established the Collaborative Research Laboratories, Open Innovation Laboratories, and AIST Consortiums, and welcome AIST ventures and Technology Research Associations in order to promote joint research with companies and universities. In collaboration with the Tokyo Metropolitan Industrial Research Institute, we provide support for small and medium-sized companies. We are also actively conducting public relations activities, such as establishing facilities to exhibit our research results and training the next generation of research personnel.

Through these activities, AIST Tokyo Waterfront will contribute to the creation of innovations that will provide world-leading solutions to social issues and lead to economic growth and enhanced industrial competitiveness.

Research Organization of AIST Tokyo Waterfront



Workforce	As of April, 2023
Permanent staff	237 people
Fixed-term staff	242 people
Visiting researchers	300 people



Technology Research Association

Technology Research Association for Next Generation Natural Products Chemistry

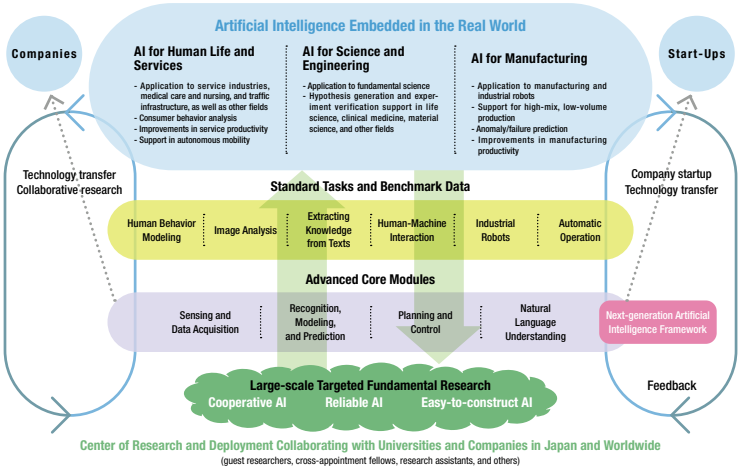
Artificial Intelligence Research Center

- Machine Learning Research Team
- Knowledge and Information Research Team
- Data-knowledge Integration Research Team
- Intelligent Media Processing Research Team
- Configurable Learning Mechanism Research Team
- Computer Vision Research Team
- Signal Processing Research Team
- Computational Omics Research Team
- Intelligent Bioinformatics Research Team
- Digital Human Research Team
- Social Intelligence Research Team
- Living Activity Modeling Research Team
- Data Platform Research Team
- NEC-AIST AI Cooperative Research Laboratory

Located at AIST Tokyo Waterfront

R&D for Human-Centered AI Technologies

The second stage of the Artificial Intelligence Research Center, which began in FY 2020, aims to research and develop cutting-edge technologies focusing on the core technologies that are needed to embed AI in the real world, which have been revealed through our past R&D for practical applications. Specifically, there are three pillars: 1) AI that can cooperate with humans, 2) AI that can be trusted in the real world, and 3) AI that can be easily configured. We will make maximum use of the AI Bridging Cloud Infrastructure (ABCI) as a large-scale computational resource.



Director KATAGIRI Yasuhiro

Through close, ongoing connections with other research institutions, industry, and academia, both in Japan and abroad, AIRC is constantly striving to deepen its ties with these partners, in order to work together to find solutions to the myriad challenges faced by today's society.

http://www.airc.aist.go.jp/en/index.html

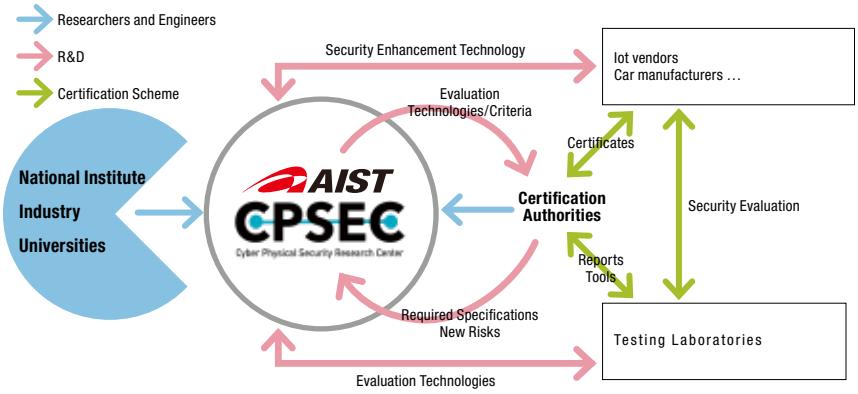
Cyber Physical Security Research Center

- Security Assurance Scheme Research Team
- Software Analytics Research Team
- SEI-AIST Cyber Security Collaborative Research Laboratory
- Advanced Cryptography Research Team
- Hardware Security Research Team
- Cryptography Platform Research Team
- Infrastructure Protection Security Research Team

Located at AIST Tokyo Waterfront

Toward the realization of secure cyber physical system

The Cyber Physical Security Research Center studies new security technologies for cyber physical systems, security evaluation methods, security assurance schemes, and its implementation in the real world.



Director MATSUMOTO Tsutomu

CPSEC aims to contribute to economic development and solving social issues by studying security enhancement technologies for integrating cyber space and physical space.

https://www.cpsec.aist.go.jp/index_en.html

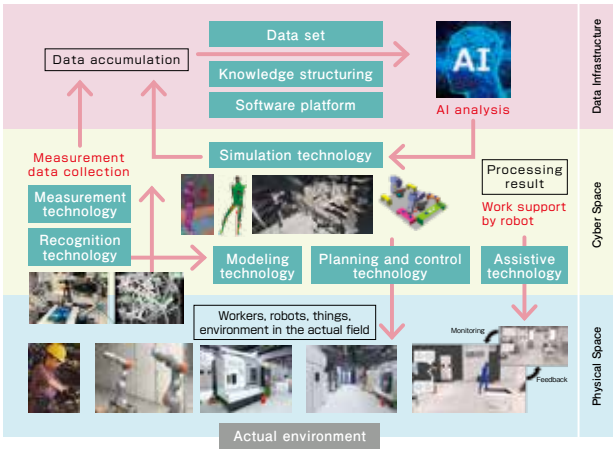
Industrial Cyber-Physical Systems Research Center

- Automation Research Team
- Field Robotics Research Team
- Advanced Manufacturing and Evaluation Research Team
- Minimal Prototyping Research Team
- Dependable Systems Research Team
- Connected Factory Research Team
- Smart-textile Research Team

Located at AIST Tokyo Waterfront

Integration research with IoT, AI and Robotics via Cyber Physical System

For technological development to acquire learning data from the actual work site, we prepare a Testbed environment for the actual work site and build a cyber-physical system that includes not only the machines such as processing machines, robots, but also the workers in the simulated environment.
Based on the cyber-physical system, we develop a system in which environmental information and work information acquired by IoT technology are converted into data, understood by AI technology, and machines such as robots to support humans. This will improve the productivity of each worker.



Director TANIKAWA Tamio

We promote research and development of technologies that integrate AI, robots, sensors, etc. and cooperate with humans. Our research centers on the manufacturing industry and contributes to labor productivity improvement, skill transfer and sophistication.

https://unit.aist.go.jp/icps/index_en.html

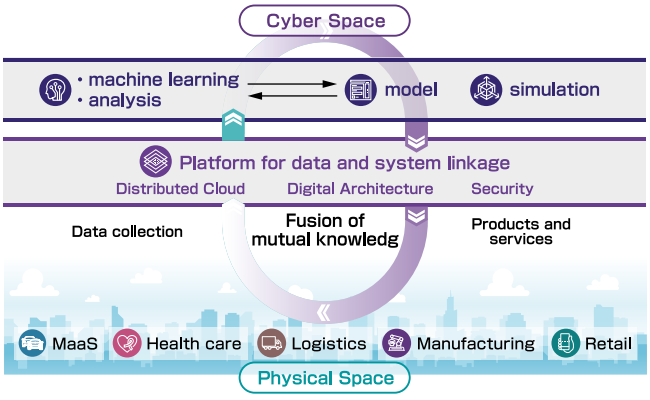
Digital Architecture Research Center

- Continuum Computing Architecture Research Team
- Continuum Computing Infrastructure Research Team
- Continuum Computing Trustworthiness Research Team
- Geoinformation Service Research Team
- Mobility Service Research Team
- Smart Mobility Research Team
- Future Core Digital Technology Collaborative Research Laboratory

Located at AIST Tokyo Waterfront

Core research for digital architecture design

DigiARC was established to research and develop technologies that promote the digital revolution, which will contribute to solving social issues and spark innovation. With the progress of digital technology, a large variety of information will be available from all sectors in the future. A society that utilizes digital information and data in real time will be realized, leading to new value and services. We are focusing on the architectural design of the entire system, which is necessary for the continuous evolution of open systems that connect data, and on research for the intelligent linking of data and consumers to achieve the digital transformation of society.



Director KISHIMOTO Hiro

In order to realize a data-driven digital society, we will coordinate research units inside and outside our center to conduct architectural design, key technology research, standardization, software implementation and dissemination activities.

https://www.digiarc.aist.go.jp/en/

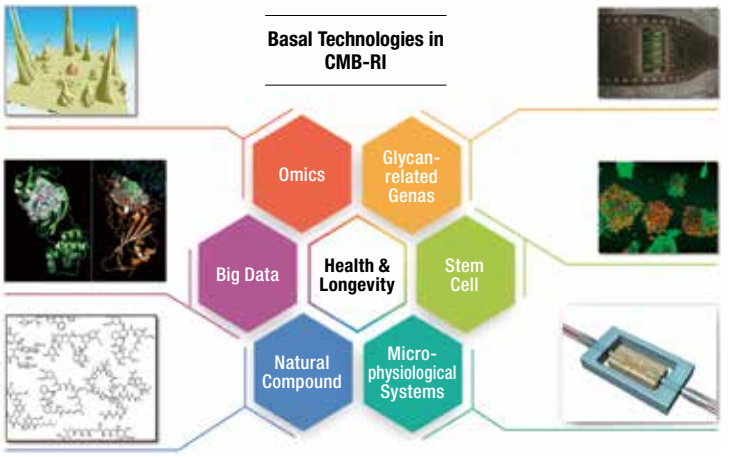
Cellular and Molecular Biotechnology Research Institute

- Leading-edge Biotechnology Research Group
- Biological Data Science Research Group
- Molecular and Cellular Glycoproteomics Research Group
- Applied Molecular Function Research Group
- Stem Cell Biotechnology Research Group
- Multicellular System Regulation Research Group
- Healthy Food Science Research Group
- AIST-INDIA Diverse Assets & Applications International Laboratory

Located at AIST Tokyo Waterfront

Aiming for health and longevity of people

Since a wide range of technologies, including IT, sensors, environments, and material chemistry, are interfacing with humans, the understanding of basic biology is vital to the consummation of novel technologies. We will contribute to the health and longevity of people through interdisciplinary R&D by collaborating with other Research Institutes of Department of Life Science and Biotechnology as well as other Departments of AIST.



Director DOI Motomichi

CMBRI aims to develop and commercialize technologies that contribute to the fields from drug discovery to medicine and healthcare by focusing on the analysis of cellular molecular mechanisms.

https://unit.aist.go.jp/cmb5/en/index.html

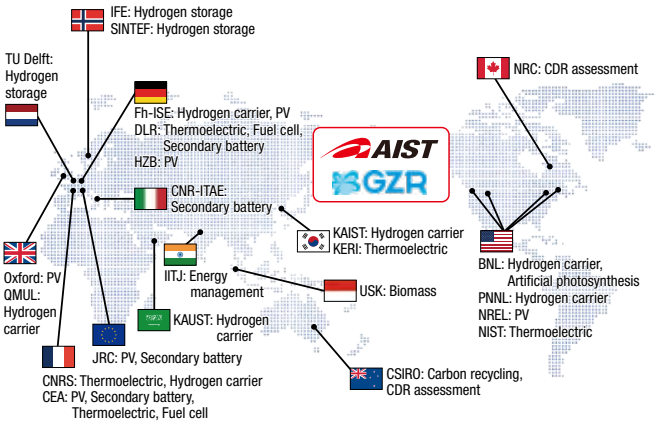
Global Zero Emission Research Center

- Headquarters
- Organic-inorganic Hybrid PV Team
- Multijunction PV Team
- Thermoelectrics and Thermal Management Team
- Fundamentals of Ionic Devices Research Team
- Artificial Photosynthesis Research Team
- Hydrogen Production and Storage Team
- Carbon-based Energy Carrier Research Team
- Smart CO_2 Utilization Research Team
- Resource Circulation Technology Research Team
- Environmental and Social Impact Assessment Team

Located at AIST Tokyo Waterfront

Environmental Innovation to achieve a zero-emission society

The Global Zero Emission Research Center (GZR) was established in January 2020 in line with the Japanese government's "Environment Innovation Strategy," which aims to reduce domestic as well as global greenhouse gas emissions. Connecting G20 researchers, GZR provides an important platform that attracts domestic and international insights about cutting-edge research and development. Our research at GZR involves technological integration utilizing technologies developed in such fields as energy devices, hydrogen energy carriers, carbon recycling, and technology assessment. Among the first in the world, we create innovations that solve social issues and strengthen economic growth and industrial competitiveness.

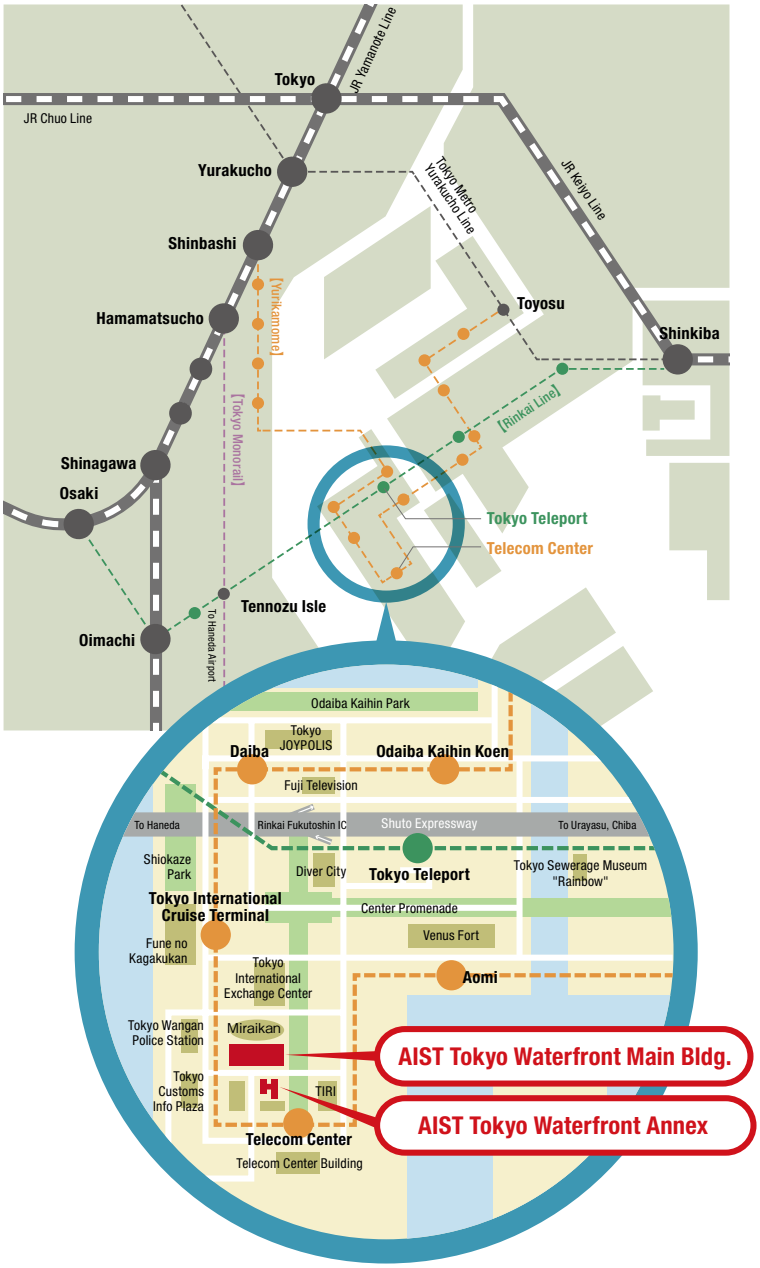


Director YOSHINO Akira

AIST has been conducting numerous research that could lead to "Zero Emission" in the future. At GZR, we first assemble these research themes and combine them with synergically to create research results. For this purpose, we will collaborate with other domestic and overseas institutions to integrate extensive ranges of technologies. To achieve a truly sustainable society, we need a corporation system that transcends organizational and national boundaries. It is my sincere hope to invite the best human intelligence to GZR serving as the hub, to resolve together the global environment issues common to all humankind.

https://www.gzr.aist.go.jp/en/

ACCESS



■ 3 minutes on foot from Telecom Center station (Yurikamome line).
■ 15 minutes on foot from Tokyo Teleport station (Rinkai line).

AIST Tokyo Waterfront Main Bldg.

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☐ +81-3-3599-8001

AIST Tokyo Waterfront Annex (Bio-IT Research Bldg.)

AIST Tokyo Waterfront Annex (Cyber-Physical-Systems Research Facility)

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https://www.aist.go.jp/waterfront/index_en.html

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