



NERPS

広島大学FE・SDGsネットワーク拠点
NETWORK FOR EDUCATION AND RESEARCH
ON PEACE AND SUSTAINABILITY

NERPS Activity Report 2018-2019



HIROSHIMA UNIVERSITY

Building World Peace from Hiroshima

INDEX

- | | |
|--|--|
| 02 Greetings from the President | 12 Message from Prof. Yohsuke Yamamoto,
Pre Executive Vice President (Research) |
| 03 Greetings from the Director | 13 Estimation of Overall Academic Contribution to SDGs |
| 04 Guiding Principles | 15 University-wide efforts in 2018-2019 |
| 05 NERPS Objectives and Implementation Structure | 43 External advisor comments |
| 07 Major initiatives | |
| 09 Public Relations and Communication | |

| Greetings from the President |

Hiroshima University is a comprehensive research university that is based on the founding principle of “a single and free university pursuing peace,” and which includes the five concepts of “spirit of peace,” “creation of new knowledge,” “education to cultivate rich humanity,” “coexistence with local communities and the international community,” and “continuous self-change.” In 2017, we formulated a long-term vision entitled “SPLENDOR PLAN 2017,” and the five principles that have until now been the pillars of this vision were embodied in an action plan, which seeks to establish “Science for Sustainable Development.” These initiatives are in line with the principles of the Sustainable Development Goals (SDGs) adopted by the UN General Assembly in 2015. We have committed to contribute further to humankind, society, and the future through various initiatives of the entire university. Based on this commitment and as part of the first year of SDGs implementation in 2018, we established the FE/SDGs network base or the Network for Education and Research on Peace and Sustainability (NERPS) as a one-stop shop for SDGs initiatives throughout the university. “FE” is the abbreviation for “Future Earth,” which is an internationally cooperative research platform aimed at realizing a sustainable global community. As a member of the Japan Consortium, FE plays a vital role as a university-wide representative institution. It also plays an important role as a contact point for communication on SDGs inside and outside of the university, and as a research promotion center for “Peace and Sustainability,” which is a transdisciplinary research platform based on cooperation among various actors. At a university-wide level, we have the capacities to integrate comprehensive university reforms with university-wide efforts to achieve the SDGs. For example, as part of its reform initiatives, the university has developed and currently operates its own AKPI®/BKPI® Achievement-motivated Key Performance Indicators based on the expertise (keywords) required to achieve SDGs. By defining the SDGs expertise of each faculty member, the university has made it possible to evaluate and measure the degree of contribution to the SDGs at various levels, including the individual, organizational, and professional level. This enables individuals and organizations to use the PDCA cycle to achieve the SDGs, and utilize them as tools for optimizing various activities. At the same time, we re-organized the 11 graduate schools into four by establishing academies with which all instructors are affiliated, thus enabling each instructor to participate flexibly in a variety of educational programs. As a result, it has become possible to more efficiently and flexibly combine highly specialized educational research with multidisciplinary and practical educational research for resolving issues, including challenges to SDGs, in a way that meets the diverse and complex needs of society. Furthermore, to continue employing faculty members in line with the overall university policy, we have adopted a unified management system for human resources at all schools and an evidence-based, target-achievement-oriented personnel policy. We shifted from the first year of SDGs implementation in 2018 to the first year of SDGs management in 2019. Hiroshima University regards contributions to SDGs as the top priority across the university. We intend to make further contributions to research, educational, and social aspects by achieving synergies between comprehensive university reforms and university-wide efforts to achieve the SDGs. We hope that this report provides you with a better understanding of the SDGs initiatives of this university, and we look forward to your continued guidance and support in the future.



President of Hiroshima University
Mitsuo Ochi

Greetings from the Director

The pioneering PhD education program entitled “Program for the Creation of a Calm and Peaceful Symbiotic Society” (Taoyaka Program) was fully operational by April 2014, and was a third-party evaluation committee at the end of the fiscal year. Serving as a professional mentor, Dr. Hassan Virji advised us, “The new degree program conducted in the Taoyaka Program is extremely ambitious and challenging, and it is an attempt to incorporate the transdisciplinary research approach into the educational program. This transdisciplinary research approach is the objective of Future Earth (FE), which is an international network of scientists involved in newly established global environmental research. We encourage them to explore cooperation with FE.” Dr. Virji was working as the Executive Director START, an international organization with a primary objective to guide PhD students in developing countries in the field of global environmental research while cooperating with FE. He is an expert in guiding young researchers, and he has been a long-time mentor and friend to me since I participated in a START-sponsored training project as a START Fellow. We conducted an interview with Ms. Fumiko Kasuga, Director of the Japan Hub of the FE International Headquarters, in September 2015, after she was introduced to us by Dr. Virji. Director Kasuga had also thought highly of the Taoyaka Program initiatives. The Hiroshima University Future Earth Education Research Network was established within the university as a university-wide organization to enable the institution to formally join the consortium members at the FE Japan Consortium Conference on October 27, 2015. On November 3, 2015, Professor Paul Shrivastava, who was the first FE Director, and Professor Hein Mallee, who was Director of the FE Asian Regional Centre and affiliated with the Institute for Global Environment Studies, were invited to Hiroshima University to consult with members of the University Executive Department. Here, they advised Hiroshima University to demonstrate its leadership in developing new transdisciplinary academic fields, such as peace and environmental sustainability. Later, when Professor Yosuke Yamamoto became Hiroshima University’s director and vice-president (research), he understood and supported the importance of this initiative and made significant efforts in allocating resources within the university. As a result, we were asked to prepare a budget for three years and assign two assistant professors to the project. In addition, under the direction of President Mitsuo Ochi, he was appointed to take charge of both internal and external communication desks, which compile and disseminate information on university-wide SDGs initiatives. After conducting a year-long international search where prominent researchers in peace and environmental studies across the world were invited, Dr. Ayyoob Shari (Environmental Studies) from the Global Carbon Project and Dr. Dahlia Simangan (Peace Studies) from United Nations University were recruited, after which the group was reorganized as the Network for Education and Research on Peace and Sustainability (NERPS). In this way, NERPS was established at Hiroshima University with the support of many senior individuals. It is not just limited to the university, but is a wide-ranging network that allows anyone to participate. NERPS aims to become an educational center with three characteristics. The first is to become a research center focused on peace backed by internationally viable research capabilities. The second is to become an educational research center where researchers and experts from the humanities and social science fields play an active role (participating in problem solving). The third is to become an educational and research hub that involves the participation of a wide variety of actors, including individuals, NGOs, private companies, governments and administrative agencies, and international organizations. We hope that this report will inform you of NERPS efforts, and that as many people as possible will participate in it.



Shinji Kaneko

Director, NERPS

Professor, Graduate School for
International Development and Cooperation (IDEC)

Founding Principle

A single unified university,
free and pursuing peace.

Guiding Principles

Based on its founding principle “a single unified university, free and pursuing peace” and its five guiding principles, Hiroshima University fulfills its roles as a national university.



SPLENDOR PLAN 2017

(SPLENDOR: Sustainable Peace Leader Enhancement by Nurturing Development of Research)

Mission

Hiroshima University intends the following: to disseminate information related to our global challenges, with the aim of creating a new concept of “Science for Sustainable Development” ; to receive international researchers and students aspiring to knowledge creation; to play a role in creating a global, diversified, free, and peaceful society, by cultivating peace-pursuing, cultured individuals with an international mindset and a challenging spirit in all quarters of society, including international communities.

Goal:

Establishment of a World Research and Education Center Leading “Science for Sustainable Development ”

In order to establish “Science for Sustainable Development,” it is essential to create knowledge that leads to a borderless, diversified, and peaceful society through continuous engagement with society and collaboration with other research fields related to the sustainability of human beings, society, culture, food, environment and nature. By devoting all available resources to the realization of this goal, Hiroshima University intends to produce the next generation of talented individuals who will contribute to the well-being of humanity through the establishment a worldwide research and education center implementing “Science for Sustainable Development.”

Three Visions

Research | Enhancement of basic and advanced studies leading to “Science for Sustainable Development.”

Education | Cultivating individuals who can oversee a changing worlexisting norms on a global scale

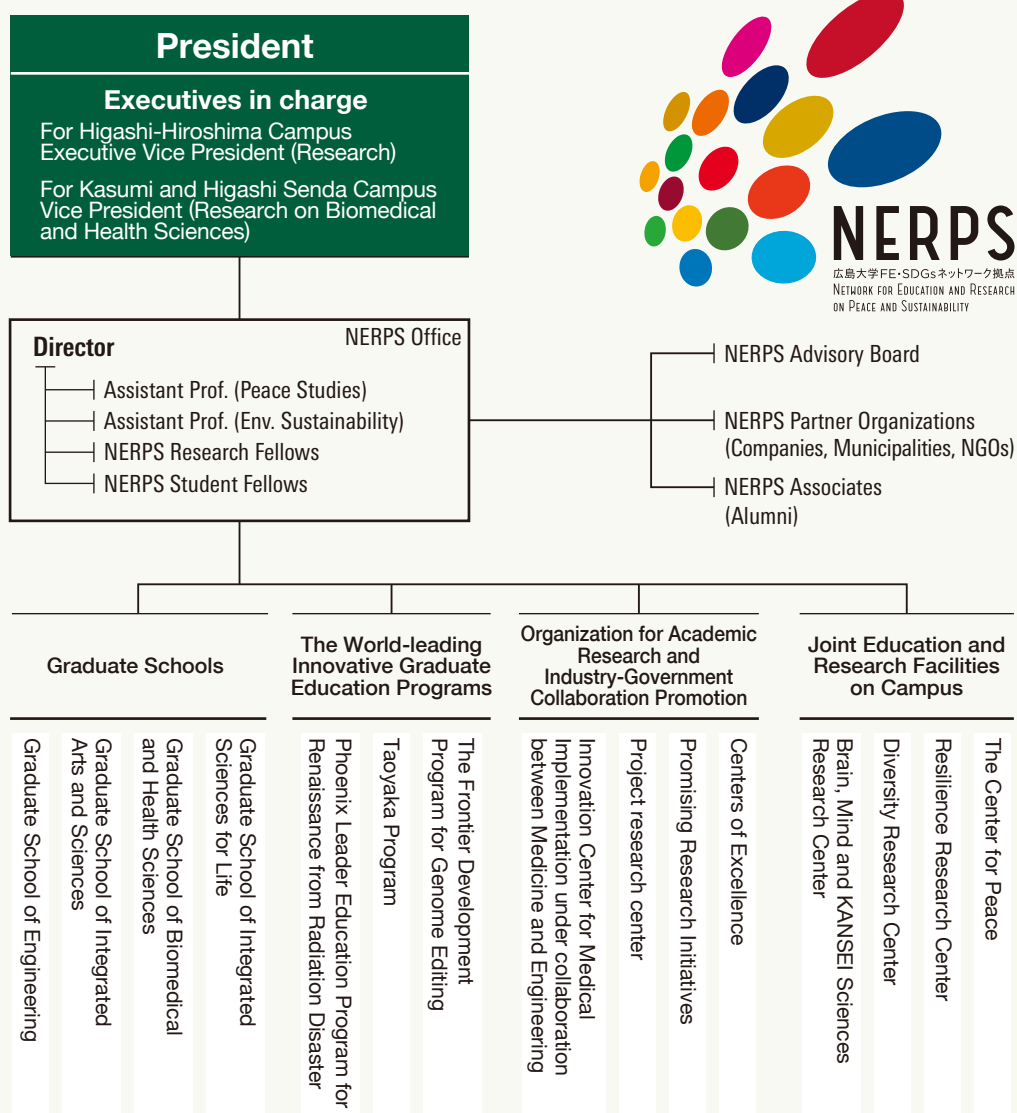
Social contribution | Strengthening of partnerships with regional and international societies

NERPS Objectives and Implementation Structure

Objectives

- 01 Aggregate various initiatives of Hiroshima University that contribute to solving global issues, and establish “Science for Sustainable Development” as stated in the Hiroshima University’s long-term vision, “SPLENDOR PLAN 2017,” while strengthening research and educational capabilities to achieve the SDGs.
- 02 Propose a transdisciplinary study, “Peace and Sustainability,” and form its international base to advance these visions.
- 03 Establish networks with university instructors, students, staff, researchers, practitioners, and citizens in Japan and abroad, as well as disseminate educational and research results related to SDGs.

Implementation Structure



Core members



| Director

Shinji Kaneko

Network for Education and Research on
Peace and Sustainability (NERPS) Director
Professor at the Graduate School for
International Development and Cooperation (IDEC)



| Assistant Professor

Ayyoob Sharifi

Assistant Professor at Graduate
School for International Development
and Cooperation (IDEC)



| Assistant Professor

Dahlia Simangan

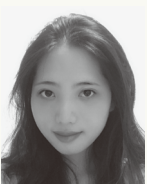
Assistant Professor at Graduate
School for International Development
and Cooperation (IDEC)



| Student Fellow

Mika Sakai

Master's Student at Graduate School
of Biosphere Science



| Student Fellow

Xuan Wu

Master's Student at Graduate School
for International Development and
Cooperation (IDEC)

Executives in charge



| For Higashi-Hiroshima Campus

Shinichi Tate

Executive Vice President (Research)



| For Kasumi and
Higashi Senda Campus

Kazuhiro Tsuga

Vice President (Research on
Biomedical and Health Sciences)

Major Initiatives in 2018-2019

Research

1. Proposals for transdisciplinary study of "Peace and Sustainability"
 - (1) Hold a brainstorming workshop
 - (2) Conduct systematic literature reviews
 - (3) Plan a special issue of an academic journal
2. Managing university research centers and linking them with SDGs
 - (1) Labeling of major Research Centers
 - (2) Keyword Matching of Dissertation Data
3. Formation of international base
 - (1) Networking
 - (2) Creation of website and social media accounts

Education

1. Establishment of a common basic education system for all disciplines
 - (1) Participation in and cooperation with the undergraduate course "Global Partnership Study"
 - (2) Participation in and cooperation with the graduate course "Academic Approaches to SDGs A/B"
2. Cooperation with overseas universities
 - (1) Establishment and development of International Joint Master Programs on SDGs: Hiroshima University and Graz University, Department of International Cooperation and Sustainability (M) (Graduate School of Human and Social Sciences)
3. Reviewing overseas initiatives
 - (1) Case of Pennsylvania State University
 - (2) Case of Arizona State University

Social Contribution

1. To educate and disseminate information to the public
 - (1) Speeches and seminars: National Institute of Advanced Industrial Science and Technology – Chugoku Center, SME Management Consultant Association, Hiroshima Prefecture Association of Small Business Entrepreneurs
 - (2) Miscellaneous dispatched experts: JICA, Hiroshima Prefecture, and IPCC
 - (3) Participation in the Stakeholder Conference for the Revision of SDGs Implementation Guidelines (sponsored by volunteers of SDGs Promotion Roundtable on September 6, 2019)
2. Cooperation with local communities
 - (1) Resolution of Community Issues through Scientific and Technological Innovation (DESIGN-i)

University management

1. Visualization of SDGs contributions
 - (1) Develop unique SDGs monitoring indices
 - (2) Measure changes in SDGs monitoring indicators over time
2. Staff training
 - (1) The third Institutional Research workshop for faculty members of Hiroshima University: "Communication to Society - Let's Inform Stakeholders about SDGs Initiatives!"; and the fourth IR workshop for faculty members of Hiroshima University: "Initiatives for SDGs at Hiroshima University and Future Issues."
3. Collaboration with Students
 - (1) Distribution of a booklet summarizing student awareness surveys on SDGs and their results
 - (2) Recruitment of NERPS Student Fellows (tagging of SDGs and analyzing academic research papers in school, collecting information on activities related to SDGs in school, and posting the information on the website)

Public Relations

1. In-school public relations

- (1) Explanation to Board members and request to wear NERPS badges
- (2) SDGs publicity and NERPS badges distributed to job seekers

2. Domestic public relations

- (1) The 1st Hiroshima University SDGs Symposium, "Our SDGs: Dialogue on International Cooperation and Regional Development (hosted by the Graduate School of International Development and Cooperation on February 24, 2018: Hiroshima International Conference Center)"
- (2) The 2nd Hiroshima University SDGs Symposium, "Reforming universities and strengthening R&D capabilities using SDGs (hosted by NERPS on December 1, 2018: Hiroshima University Higashi-Chida Future Development Center)"
- (3) The 3rd Hiroshima University SDGs Symposium, "Innovation, Collaboration, and Transformation for Peace and Sustainability (hosted by NERPS on February 11, 2019: Hiroshima University Koujin Hall)"
- (4) Introduction to the University's SDGs Initiatives at Toyo Keizai ACADEMIC: Special Feature on SDGs (Toyo Keizai Inc., published in July 2019)
- (5) Publication of NERPS Activity Report 2018-2019

3. International Public Relations

- (1) Poster presentation on NERPS-related SDGs initiatives at a side event of the Group on Earth Observation (GEO) (October 30-November 1, 2018, Kyoto International Conference Center).
- (2) Assistant Professor Dahlia Simangan reports on NERPS initiatives at the Future Earth Asia International Symposium: Socio-Ecological Health in Asia 2019 (November 11-13, 2019, Seoul University Asia Center)
- (3) Raising public awareness of NERPS at international conferences and workshops by NERPS-affiliated instructors (Assistant Professor Ayyoob Sharifi: World Forum on Climate Justice/Glasgow, UK, June 18, 2019; Assistant Professor Dahlia Simangan: ISA Asia Pacific Conference 2019/Singapore, July 4-6, 2019; Australian Political Science Association Annual Conference 2019/Adelaide, Australia, September 22-25, 2019; Earth System Governance Mexico Conference/Oaxaca, Mexico, November 5-9, 2019)
- (4) Active dissemination of information through United Nations Academic Impact, Sustainable Development Solution Network, Future Earth Japan Consortium, etc.

Public Relations and Communication

○Website production



The Japanese version of the website is open to the public, with a particular focus on students in Japan and at our university. This website introduces the NERPS vision and structure, and also provides an outline of the initiatives as well as student-led SDGs initiatives.

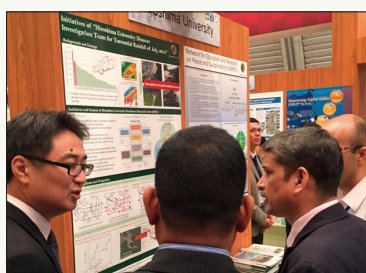
URL <https://nerps.hiroshima-u.ac.jp/>



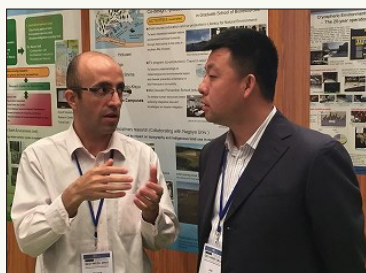
The English version of the website publishes information with a focus on overseas and foreign-exchange students. In addition to disclosing basic NERPS information, this site also includes functions such as registering foreign stakeholders and posting research papers on transdisciplinary research.

URL <https://nerps.org/>

○Exhibition of Posters at the 15th Group on Earth Observation



From October 30 to November 1, 2018, Professor Shinji Kaneko, who is the NERPS director, and Assistant Professor Ayyoob Sharifi participated in a side event at the 15th Group on Earth Observation (GEO) held at the Kyoto International Conference Center. We used posters to explain the initiatives and progress of “Peace and Sustainability,” which is a transdisciplinary research project promoted by NERPS, to visitors from governments, academia, industry, and others involved in various projects that use Earth observation data. We discussed networking and further utilization of earth observation data.



○Hosting of symposia



Our SDGs -Dialogue on International Cooperation and Regional Development-

The objective of this symposium was to deepen public understanding of SDGs and to consider ways for local and international organizations to effectively cooperate as equal partners. Mr. Sakiko Fukuda-Parr (Professor, New School University; Deputy Chairman, United Nations Development Policy Commission) and Mr. Scott Gates (Professor, former Director, Peace Research Institute Oslo) were welcomed as keynote speakers. Mr. Shuichi Ikeda (Director, Japan International Cooperation Agency – International Center for China), Mr. Yasufumi Tsukamura (Staff member, NPO Peace Winds Japan), and Mr. Ryoyuki Kawamoto (Staff member, Osaki Kamishima-cho, Toyota-gun, Hiroshima Prefecture) also participated in the panel discussion and discussed the effectiveness of SDGs in the context of international cooperation and regional development. There were more than 200 participants on the day of the event, including a large number of high school students, making the symposium very meaningful.

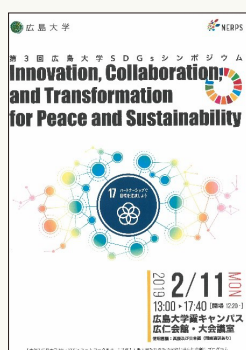
[See the symposium report in the Website!] <https://www.hiroshima-u.ac.jp/idec/news/44602>



Reforming universities and strengthening R&D capabilities using SDGs

The objective of this symposium was to consider how universities, which are educational/research institutions, could incorporate SDGs into their “main business,” and what university reforms would be required to make effective use of the symposium. The symposium also aimed to consider how to balance research with the strengthening of research capabilities and how to achieve synergies. As keynote speakers, Tahl Kestin (Research Program Manager, Monash Sustainable Development Institute, Monash University) and Derrick Anderson (University President’s Office Advisor, Arizona State University) were invited to introduce advanced case studies. On that day, there were more than 120 participants, mainly from universities. Members of private and national universities and other stakeholders asked a number of questions based on their respective perspectives and interests, and lively discussions took place.

[See the symposium report in the Website!] <https://nerps.hiroshima-u.ac.jp/2019/02/19/sample-post/>

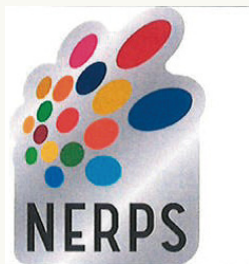


Innovation, Collaboration, and Transformation for Peace and Sustainability

This was divided into three parts. In the first part, Paul Shrivastava (Director, Sustainability Institute, Pennsylvania State University), Ms. Fumiko Kasuga (Director, Japan Hub of the Future Earth International Headquarters) and Mr. Masahito Taniguchi (Deputy Director and Professor, Research Institute for Humanity and Nature) reported on the characteristics and latest circumstances of this collaboration from the perspective of “Future Earth,” an international collaborative research platform that promotes collaboration among diverse stakeholders. In the second part, Yoichi Fukui (International Cooperation Division, Global Environment Bureau, Japanese Ministry of the Environment) gave a bird’s eye view of Japanese case studies from a government perspective, and Yuko Urashima (Sustainability Promotion Office, General Planning Department, MS&AD Insurance Group Holdings) introduced case studies. In the third part, presentations on topics such as disaster prevention, MaaS, sensitivity innovation, and diversity were made from the perspectives of case studies being conducted by the university’s research teams with partner companies. Participants and others exchanged opinions in the second half of the conference.

[See the symposium report in the Website!] <https://www.hiroshima-u.ac.jp/idec/news/44602>

○NERPS badges



SDGs are global model-building activities. For this reason, the United Nations has created SDGs logos and badges as communication tools. The number of people who agree with this and wear the badges is increasing. In general, wearing the badges not only raises public awareness of the organization and initiatives throughout society, but also increases a sense of solidarity among members of that organization, who become committed to the spirit of their organization and initiatives. SDGs initiatives cover an extremely wide range of fields, and Hiroshima University is working as a whole making a certain direction and applying its own characteristics. This is reflected in the SPLENDOR PLAN 2017, and in order to clearly demonstrate this commitment, original NERPS logos and badges were created to show how peace pursuits and education are being carried out by Hiroshima University. Specifically, we are focused on the initiatives for “Goal 4: Quality Education” and “Goal 16: Peace, Justice, and Strong Institutions,” and we are confident that they will further drive our initiatives in relation to other goals. Students are invited to learn about these outlooks and specific initiatives and participate in them. They are encouraged to wear NERPS badges during job-seeking activities. Original logos and badges can be used to show that the wearer not only knows about or has individually joined and participated in SDGs activities carried out by the UN, but is also aware of the activities carried out by Hiroshima University as a whole and its active commitments. We hope that more members of Hiroshima University will support and participate in the initiative by wearing these badges.

Yohsuke Yamamoto, Pre Executive Vice President (Research)**Yohsuke Yamamoto**Professor
at Graduate School of Science

First of all, I would like to express my heartfelt appreciation of the fact that the Network for Education and Research on Peace and Sustainability (NERPS) of Hiroshima University is being promoted and developed steadily. As stated in the greetings by Network Director Kaneko, I was the research director in FY2017 and FY2018. I joined Hiroshima University in April 1977, and except for supervising technical staff while serving as the chief of the Technology Center, I had no relationship with the graduate schools or staff members. I was focused on research and education as a chemistry faculty member. So, when I was promoted to my first major role as a university executive, I did not know anything about university activities or management. I remember thinking, “SDGs? FE? What’s that?” when Professor Kaneko visited me in early FY2017. However, following this visit, I realized that it is important to establish FE/SDGs networks at universities and to raise its visibility for Hiroshima University. As it is a global goal, I asked Professor Kochi to discuss the characteristics, strengths, and future strategies of Hiroshima University and to build FE/SDGs networks. I was able to get Professor Kochi to help when applying for the global expansion capability project (India), which took advantage of the wide range of characteristics of the project from the perspectives of international cooperation and peace. During this time, I was impressed that Professor Kaneko and Professor Fujiwara from IDEC worked so hard through the Golden Week holiday. At that time, it was well understood that the application for this project entailed the development of the “Program for the Creation of a Calm and Peaceful Symbiotic Society,” which is a pioneering PhD education program. It was also well understood that the global expansion capability project (India) will become vital for the global achievement of the SDGs. Fortunately, not only was the global expansion capability project (India) adopted, but SDGs lectures also became mandatory for all graduate students following the restructuring of graduate schools in FY2019. English-language lectures are the foundations of these programs, and Assistant Professors Ayoob Sharifi and Dahlia Simangan are in charge of the lectures. Consistent contributions to the international network and research developments by Network Director Kaneko can be said to have served as the important pillars and foundation of Hiroshima University in its application and development of young international human resources. I would like to express my deepest appreciation of the fact that we were able to make a small contribution when that foundation was established. In November 2018, I reported on the current state of Japan’s SDGs efforts as a representative of President Kochi at Conferencia Internacional Anuies in Mexico. I was able to discuss the relationships between my research as a basic chemist and SDGs at the MIRAI Project Lecture (Tokyo) in March 2019. The main objective of my research was to synthesize new compounds as described in textbooks, not applied chemicals. However, when I changed my point of view, I became aware that these new compounds could lead to a big breakthrough for society. I realized that it is essential to recapture the work of research communities as a whole from the FE/SDGs perspective. I am also deeply grateful for this opportunity. I hope that this letter will lead to increased public awareness of such a researcher community.

Estimation of university's overall contribution to SDGs

Calculate SDGs contributions using our own achievement-motivated key performance indicators

We, at Hiroshima University, used keywords in academic papers and combined this information with the achievement-motivated key performance indicators (AKPI®) developed independently at our university to determine to which SDGs university faculty members are contributing and which specializations are being applied, and to develop a wider perspective on instructor activities (including educational and social contribution activities).

[Specific calculation methods]

- ① The authors matched Scopus papers published in 2018 by Hiroshima University faculty members (as of May 1, 2018) with a SDGs Keywords List (Sustainable Development Solutions Network [SDSN] Reference ※1), and determined the involvement of each paper with SDGs. Then, the authors specified which SDGs items were involved in which paper and also the percentage of involvement.
- ② The percentage of involvement of SDGs items for each instructor in ① was multiplied by the points for each AKPI® category in 2018 and then allocated to 17 SDGs items (the sum of an instructor's AKPI® points across the 17 SDGs items is the same as the sum of the instructor's total AKPI® value). The points assigned to the 17 SDGs items are aggregated by each criterion and divided by the number of instructors involved to calculate the mean per capita value.

Figure A shows the table with the calculations made in the manner described above. The figure shows the following:

- The SDG_Nos. that involve the most instructors in descending order are SDG_02 (272 students, 349.1P), SDG_15 (227 students, 380.4P), SDG_10 (133 students, 272.0P), SDG_03 (131 students, 329.7P), and SDG_13 (73 students, 408.8P).
- The SDG_Nos. with the highest AKPI® in descending order are SDG_13 (408.8P, 73 people), SDG_15 (380.4P, 227 people), SDG_02 (349.1P, 272 people), SDG_07 (342.0P, 50 people), and SDG_17 (340.3P, 14 people).

Figure B shows the chronological changes in the number of faculty involved in SDGs and the mean per capita AKPI® values based on 2018 Scopus papers with a Hiroshima University faculty member as an author, using the same methods and tracing back up to 2012. This figure shows that both the number of teachers working with SDGs expertise and the mean AKPI® are rising, albeit slightly.

What is AKPI® (Achievement-motivated Key Performance Indicator)?

AKPI® is a key performance indicator that sets targets for the next 10 years based on the top 100 universities worldwide. AKPI® comprises five elements (① Classroom management [300 points], ② PhD training [150 points], ③ Number of SCI papers [300 points], ④ External funding [150 points], and ⑤ Internationality [100 points]). Hiroshima University would be among the top 100 schools if the sum total of the points from these elements exceeds an average of 1,000 points per instructor. Please see the Hiroshima University website for details.

※1 <http://ap-unsdsn.org/regional-initiatives/universities-sdgs/>

Figure A: Contribution to SDGs (= AKPI® values of instructors related to SDGs) (2018)

The number of applicable
faculty members: 546 persons
Average: 721 points

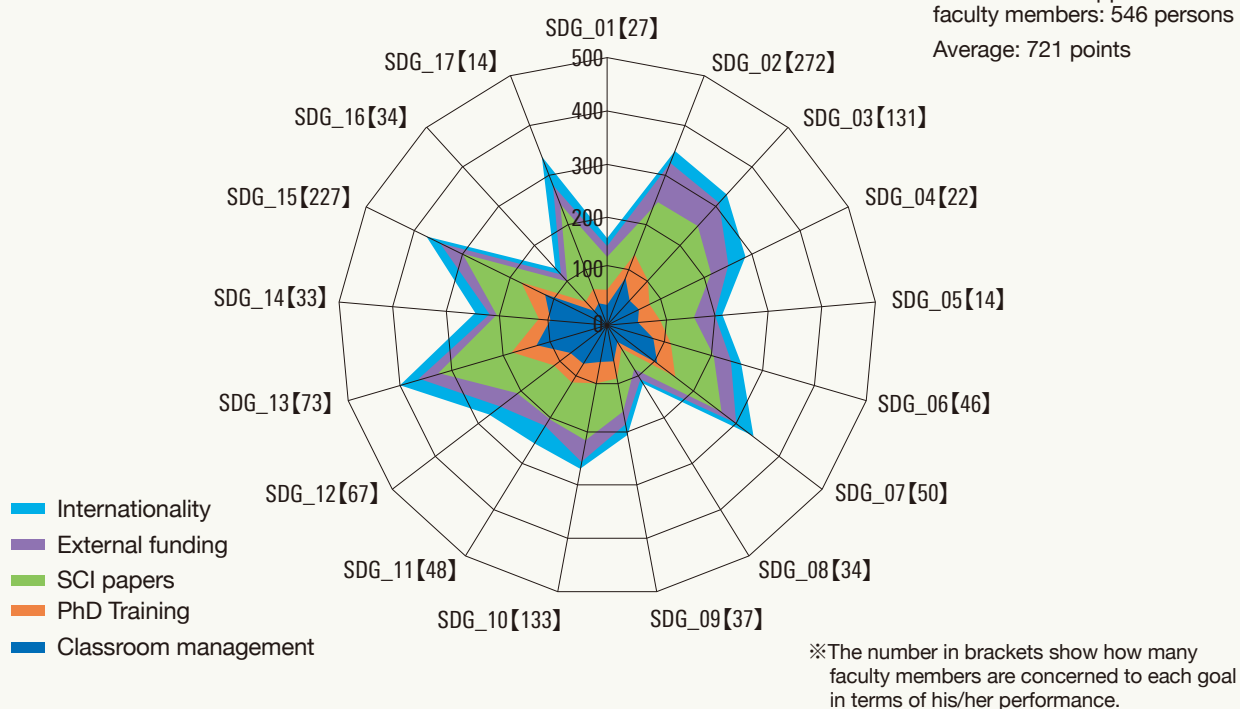
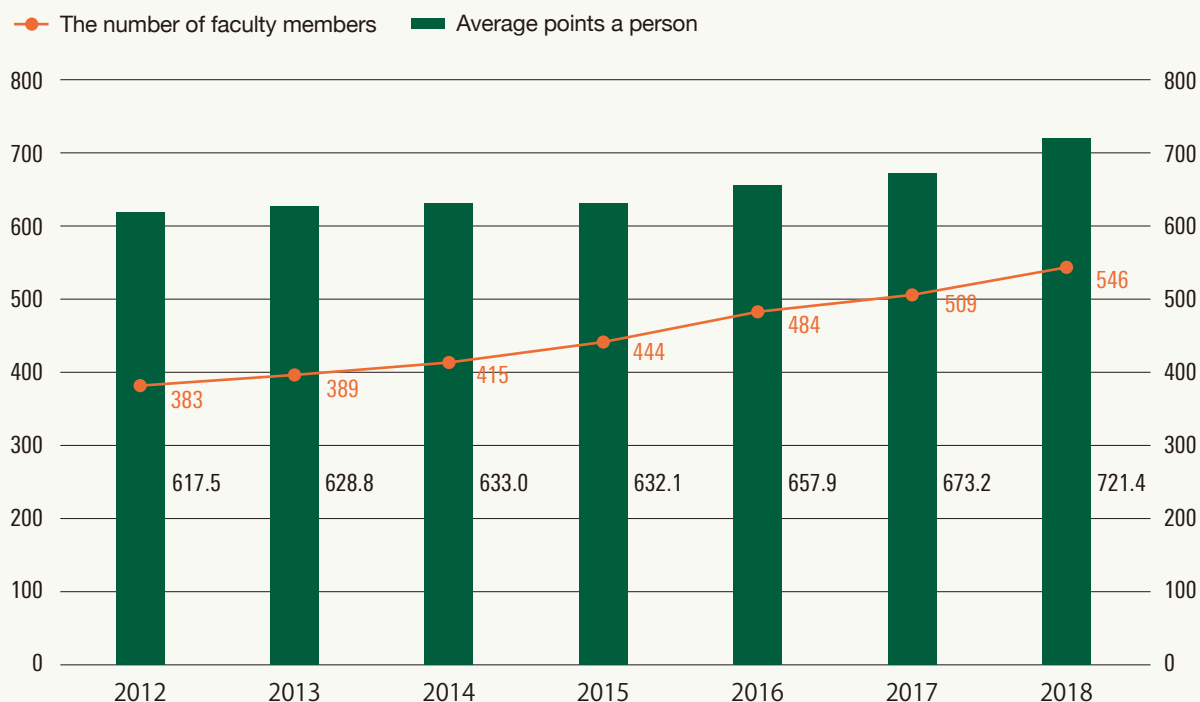


Figure B: Annual changes in contributions to SDGs (= AKPI® values of instructors related to SDGs) from 2012 to 2018





NERPS

University-wide efforts in 2018-2019

- 16 | Education
- 20 | Research
- 37 | Outreach
- 41 | University management

Establishing a university-wide educational system

Establishment of Common Courses – Peace courses in undergraduate education, SDGs courses, and common graduate school courses –

Since 2011, all undergraduate students, regardless of department or specialization, have been required to take the Peace Course, which is a core liberal arts subject (common undergraduate course). A task shared across the program is the writing of observation reports on monuments relating to peace (e.g., Hiroshima Peace Memorial Museum). Additionally, the concept of “peace” is obviously meant to enable students to understand the tragedy of war and foster an appreciation of disarmament, including nuclear non-proliferation, while also reexamining the global issues of “poverty,” “hunger,” “population growth,” and “environment” from a variety of perspectives, including politics, education, culture, science, and technology. “Global Partnership Studies,” which is one of the Peace Courses, provides lectures on international cooperation and development, including SDGs, in English that are delivered by a mixed team of faculty members of this university, with the cooperation of a diverse range of practitioners and experts, including JICA. In 2018, the same subjects were also introduced to graduate schools as “Academic Approach A to SDGs” and “Academic Approach B to SDGs.” As a basic foundation shared by all graduate students studying at this university, the program provides opportunities for students to learn about the points of contention and approaches to solving the major issues of each SDGs.

Graduate school education reform

Graduate School for International Development and Cooperation

The evolution from MDGs to SDGs has become an important issue not only for developmental problems in developing countries but also for sustainable development in developed countries. However, the problems of poverty and hunger remain important in SDGs, and the way in which developing countries progress is the key to solving many global environmental problems. Hiroshima University has had a special track record for more than 25 years in the area of human resource development in these developing countries. Specifically, this was because the Graduate School of International Development and Cooperation, known as IDEC, was established in 1994 and has provided a place where personnel in developing countries who are in positions of responsibilities in their respective countries (primarily Asian and African government officials) and those in developed countries who are active in the fields of international cooperation and development (e.g., Japan) can work together in a universal language. To date, IDEC has awarded degrees to more than 2,500 graduates, over half of whom are international students from Asia and Africa. Today, there are still 300 students from about 40 countries. I believe that the development of these human resources is a major contribution to SDGs of Hiroshima University in the educational field. Moreover, the wide-ranging involvement and activity of Hiroshima University graduates in SDGs-related projects implemented in developing countries are considered to be indirect contributions of our university to SDGs.

Leading graduate school



Tour of Fukushima Daiichi Nuclear Power Plant



Temporary Housing Interview (Field work)

① Phoenix Leader Development Program to Promote Radiation Disaster Reconstruction

The “Phoenix Leader Development Program to Promote Radiation Disaster Reconstruction” seeks to develop “global leaders (Phoenix Leaders) who are capable of appropriately responding to radiation disasters based on a wide range of interdisciplinary knowledge, have the ability to judge and act in order to guide reconstruction under a clear philosophy, and play an active role internationally.” Individuals in the program are required to take courses in radiation disaster medicine, environmental radiation measurement, and risk communication to acquire the knowledge and skills necessary for specialists in radiation disaster reconstruction. In addition, we provide thorough training that emphasizes “on-the-job” activities, including internships at cooperative organizations in Japan and overseas, such as the International Atomic Energy Agency (IAEA) and the Center for the Assessment of Protection in the Nuclear Field (CEPN), and field work in areas affected by nuclear power plant accidents. Students think about what their research means for disaster recovery and then build their careers. Then, we will create a report on academic achievements in “Radiation Disaster Reconstruction Studies” based on the issues of radiation recovery set by each student, which will be the culmination of the program. Based on our experience in supporting reconstruction from the atomic bombings, we will establish “radiation disaster reconstruction studies” as a new discipline that intersects existing specialized fields, and contribute to the establishment of a safe and secure new social system as a model for the 21st century.



On-site training vocala (Bangladesh)

② Program for the Creation of a Calm and Peaceful Symbiotic Society (Taoyaka Program)

The Hiroshima University Graduate School Leading Program, entitled the “Program for the Creation of a Calm and Peaceful Symbiotic Society” (Taoyaka Program) (2013 Japanese Ministry of Education, Culture, Sports, Science and Technology PhD Education Leading Program), is a five-year, integrated education program that aims for co-creation of local culture and development of cutting-edge science and technology based on regional needs that can more effectively address regional challenges, thus leading society in the desirable direction. Students in the Taoyaka Program continuously hone their specializations, engage in collaborative on-site education that goes outside of their fields, and accumulate experience, while participating in the three courses of cultural creation, technological creation, and social implementation. There is not just one scientific and technological solution to diverse cultures and societies. On-site education involves student teams engaged in proposing and implementing interdisciplinary approaches by directly learning from communities in disadvantaged regions of the world (mainly focused on Japan and South Asia), solving the issues faced by each region, and thereby working outside of the course framework. Centering on on-site learning, the Taoyaka Program develops human resources that demonstrate leadership across sectors as local SDGs promotion leaders. To date, 76 students from 20 countries have participated in the program, producing 12 alumni from six countries. We will continue to work to develop human resources who will contribute to the coexistence of multiple cultures via an educational program that practices Hiroshima University’s new philosophy of peace science, “Science for Sustainable Development.”

International Linkage Degree Program (ILDP Program)



In 2017, Hiroshima University launched the International Linkage Degree Program (ILDP Program) for the Development of Innovative Human Resources for Socially Implementing Advanced Technologies. The program promotes student exchanges with six institutions in India (Indian Institute of Technology, Delhi; Indian Institute of Technology, Mumbai; Birla Institute of Technology and Science, Pilani; Indian Institute of Engineering Science and Technology, Shibpur; Central Electronics Engineering Research Institute; and Indian Institute of Management, Ahmedabad). The ILDP Program aims to develop innovative human resources who can demonstrate leadership in developing, practicing, and disseminating advanced technologies that address the challenges facing the region. The program has reorganized various successful international programs, focusing on three interdisciplinary areas (smart infrastructure, new energy, and environmental persistence), and has developed eight student interaction programs, ranging from introductory to applied and practical, in both Japan and India. Students from a wide range of fields, from undergraduates to doctoral students, participate in the program and actively study in both Japan and India. We have dispatched 70 Hiroshima University students and accepted 113 Indian students (as of the end of November 2019). For Japanese and Indian students, the cross-regional learning provided by the program not only helps them acquire specialized knowledge and internationality, but also provides an opportunity for them to deeply understand diversity and foreign cultures. The scope of these programs is not limited to student exchanges but includes the development of exchanges between researchers and the expansion of global networks, contributing to the development of the university's SDGs.

International Joint Degree Program

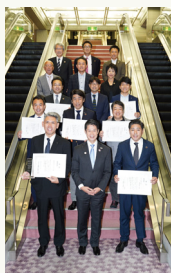
Since 2008, this university has participated in the International Joint Master's Program for Consortium-Based Sustainable Development, which is conducted by four European universities: Graz University (Austria), Leipzig University (Germany), Venice University (Italy), and Utrecht University (the Netherlands). With the objective of further contributing to the SDGs in the field of education (human resources development) by adding a master's degree program that has high international versatility in SDGs-related matters as well as high international recognition, the university decided to participate in the consortium as the first degree-granting university in regions other than Europe from FY2020. In 2019, we reached an agreement with the four European universities and prepared for the establishment review by the Japanese Ministry of Education, Culture, Sports, Science and Technology. Hiroshima University will make use of its past achievements to further enhance the relevance of its consortium-type international joint master's program by upgrading its educational content on development and environmental sustainability in developing countries, particularly in Asia and Africa, and by upgrading educational methods that emphasize student autonomy, collaboration, and on-site experience. As a result of the installation review, the following two programs were approved in December 2019 with Graz University and Leipzig University, and the acceptance of students will start in FY2020. This enables Hiroshima University students to study for one year at Graz or Leipzig University and to obtain an International Joint Master's degree in Sustainable Development.

- ① Department of International Cooperation and Sustainability, Hiroshima University and Graz University (Graduate School of Humanities and Social Sciences)
- ② Department of International Cooperation and Sustainability, Hiroshima University and Leipzig University (Graduate School of Advanced Science and Engineering, Hiroshima University)

Achieve SDGs through collaboration between NERPS and local communities !



Mariko Nishizawa
Hiroshima Peace Promotion
Project Team



SDGs Business Contest
Final Jury Participants
and Reviewers (October
2019); Sponsor:
Hiroshima Prefecture

Hiroshima Prefecture was selected as the “SDGs Future City” by the Cabinet Office in 2018, and is working to build a platform to create peace initiatives through the participation of multiple stakeholders, including companies and NPOs/NGOs. Hiroshima Prefecture is also working to build a peace human resources development platform to provide young people, estimated to be at 1.8 billion in global population, with opportunities to learn about peace in order to help them understand the importance of peace and hope in reconstruction and peace-building. In this context, I am very pleased that Hiroshima University has launched NERPS, quickly learnt from the outstanding efforts of foreign countries, and worked on super-interdisciplinary studies centered on Peace and Sustainability. In terms of university management, I also strongly believe that Hiroshima University is steadily accumulating results from the perspective of SDGs. I hope that Hiroshima University will become a global research center in this field, and become a leader in regional development in the area of sustainable town development. At the same time, in collaboration with Hiroshima University and with the support of the national government, the prefectural government will expand the scale of initiatives with various entities such as universities, research institutes, and international organizations. Simultaneously, the prefectural government will promote the participation of business sectors and civil society, strengthen mutual collaboration, support research, and develop human resources with the ability to transmit information to the world. Through these efforts, the entire prefecture intends to contribute to the achievement of the 2030 SDGs.

【Information is available below websites.】

<https://hiroshimaforpeace.com/> (Japanese)

<https://hiroshimaforpeace.com/en/> (English)

Providing safer and more delicious next-generation Japanese food to the world

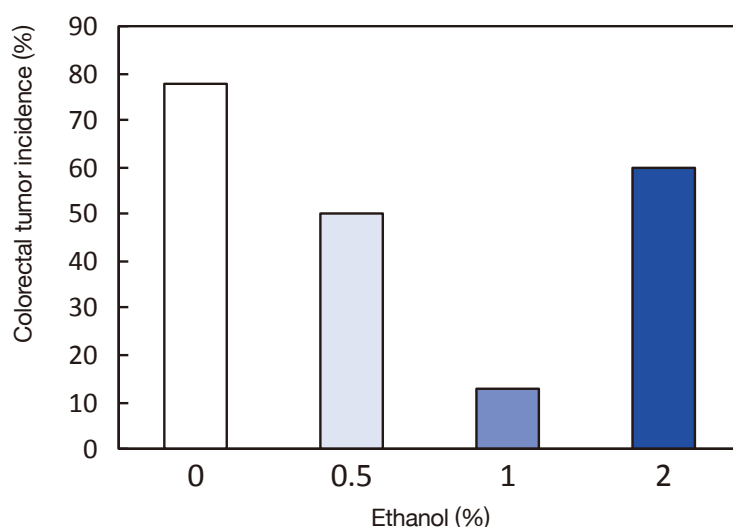
The Research Center for
Japanese Foods

Director:

Tadashi Shimamoto, Professor,
Graduate School of Integrated
Sciences for Life



At our innovative R&D center for Japanese and fermented foods, we focus on the health effects of Japanese foods and our unique fermented foods and promote research from three perspectives, namely ① health functionality, ② food safety, and ③ food processing technology, with the aim of taking next-generation Japanese foods to the world. From the viewpoint of health functionality, we have conducted a variety of studies and have been successful in improving intestinal flora and increasing intestinal GABA through koji-fermented foods, improving cerebral function with small amounts of alcohol (J-curve effect), restoring muscle function with vitamin B6, suppressing intestinal inflammation through polyphenols and bifidobacteria, and reducing chronic kidney failure with the help of highly fermentable, water-soluble dietary fibers. From the viewpoint of food safety, we are developing disinfectants to prevent food poisoning and conducting research on how to stop the transmission of drug-resistant bacteria through food. From the viewpoint of food processing technology, we are conducting research to clarify changes in the physical properties of foods (melting, crystallization, glass-rubber transition, etc.) and help regulate processing, storage, and taste (texture). We have also established the Functional Food Study Group for Fermentation and Enzymes, and have launched a consortium of Japanese food and fermented food-related companies and university researchers nationwide to conduct joint research on the health effects of fermented foods. The SDGs are closely related to our R&D center and expected to contribute to “zero hunger,” “good health and well-being of people,” and “responsible consumption and production” through the development of next-generation Japanese foods.



The J-curve effect by low-dose of alcohol consumption:
Consumption of 1% ethanol suppressed the incidence of colon tumorigenesis.

Developing interdisciplinary theory and technology for diversity and inclusion

Practicing and Developing Science for Diversity and Inclusion

Director:

Kiriko Sakata, Professor,
Graduate School of Integrated Arts
and Sciences



We engage in empirical research and practical application in multi-disciplinary approaches in order to ensure, not only that all the people, whether they constitute a majority or a minority, should enjoy equal rights, but also that people's diversity should lead to innovative creation in society and sustainable prosperity for all. Focusing on diversity and inclusion, especially in the three terms of gender, disability and ethnicity/cultural background, we share and compare findings in the three fields above to discover principles common to all the three and specific to each.

Clearly, we do share SDGs' frequently cited aim, "leave no one behind," and indeed, "Goal 5: Gender Equality" and "Goal 10: Reducing Inequalities," some of the most lagged-behind areas in Japan, are among our main research targets. Through interdisciplinary research across various fields, such as psychology, cultural anthropology, gender studies, education, and management, we aim to give academic contributions to bring about positive changes to our society.

For that purpose, we actively collaborate with practitioners on-site. For example, through collaboration with personnel sections in private companies, we have been conducting empirical research on the factors to promote or hinder women workers' motivations for career advancement. We have also set up a study group with researchers and administrative officials in Hiroshima Prefecture, and have been sharing ideas we have found from on-the-spot research.

Through further research and collaboration, we aim to conduct pilot interventional measures for creating non-discriminatory and inclusive society harmonious with diverse cultures, genders, and abilities.



Dialogue practice between participants in the open lecture



Poster for the open lecture

Designing new educational visions and skills

Educational Vision Research Institute

Director:

Kazuhiro Kusahara, Professor,
Graduate School of Education



The Educational Vision Research Institute (EVRI) conducts research and development organically in the following three units:

Learning Space Unit :

Designing a learning space that allows people to learn together deeply at any time

Curriculum Unit :

Designing a curriculum to support new learning for learners and teachers

Specialist Units of Education :

Designing the expertise required of educators and researchers in supporting teachers

In particular, we have strengths in supporting educational reform, such as creating learning spaces that realize inclusive education, creating curricula for peace and sovereign education, creating teaching materials based on IB philosophy, and creating programs (class research) that enhance the specializations of teachers as well as teacher educators. In recent years, we have worked with the Ministry of Education and the Teacher Training College in Cambodia, the Ministry of Education and San Marcos University in Peru, Münster University in Germany, Graz University in Austria, the Hiroshima Global Academy, and the Hiroshima Mirai Creation Senior High School in Hiroshima Prefecture to design new educational visions and skills, and we are also conducting empirical research on their significance and effects. The SDGs directly overlap with the goals of the headquarters. Among the 17 goals in particular, we aim to achieve “Goal 4: Quality Education” by proposing a new educational vision and theorizing skills. In addition, “Goal 5: Gender Equality,” “Goal 10: Reducing Inequalities,” and “Goal 16: Peace, Justice, and Strong Institutions” are aimed to be achieved through collaborative projects with domestic and overseas collaboration centers.



Workshop on the Development of Expertise of Staff at Cambodia's New University of Education



Peace Education Project based on IB Philosophy at Hiroshima Global Academy

Hiroshima University Educational Vision Research Institute (EVRI)

http://evri.hiroshima-u.ac.jp/research_and_development

Making cultivation possible in unsuitable agricultural land

The Research Core for
Plant Science Innovation

Director:

Jun Wasaki, Professor,
Graduate School of
Integrated Sciences for Life



Salt deposits on the ground surface
in the northeastern region of Thailand
(salt-stressed soil)

At the “The Research Core for Plant Science Innovation,” we are developing a number of SDG-related research projects. Among these, the initiatives for making cultivation possible in unsuitable agricultural land will be introduced in this section.

Solving the Low Phosphorus Problem: There has been a depletion of phosphorus ore, which is a raw material for phosphate fertilizers. Resources in Japan consist entirely of imports, and the development of crops with high phosphorus utilization efficiency is very important. At our research core, we succeeded in isolating gene regions contributing to this trait from rice varieties with high phosphorus utilization efficiency.

Solving the Problem of Salt-stressed Soil: We are working to solve the problem of salt-stressed soil, which is mainly expanding in arid lands around the world. In particular, one of the core’s strengths comes from our research and development to strengthen the salt tolerance of crops. Currently, we are conducting international joint research, such as salt-stressed soil surveys and research on the production of salt tolerant crops, in cooperation with universities and research institutes in Southeast Asia and Africa, while mutually dispatching researchers and students.

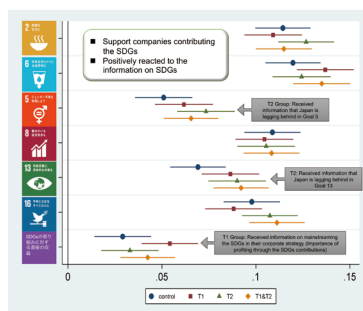
These studies are aimed at contributing to crop production on unsuitable agricultural land. Among the SDGs, the project will contribute to “Goal 1: Eliminate poverty,” “Goal 2: Zero hunger,” “Goal 9: Industry, Innovation, and Infrastructure,” “Goal 13: Climate Action,” and “Goal 15: Life on land.” By elucidating the mechanism of tolerance of wild plants and crops, it is expected that crops with enhanced low phosphorus tolerance and salt tolerance can be produced using crossbreeding, gene recombination, and genome editing techniques. In the future, to increase food production to resolve global issues, we are aiming for social implementation, such as the creation of crops with enhanced tolerance and the increase of crop production in uncultivable areas.



Low Phosphorus Resistance Test in Paddy Fields: Varieties vary from row to row

The SDGs as business norms: survey experiment on stakeholders' preferences

Shinji Kaneko, Professor and
Tomomi Yamane, Researcher,
Graduate School for International
Development and Cooperation (IDEC)



On March 2019, we conducted an online survey targeting 6,000 Japanese aiming to analyze whether it is beneficial for the private sector to contribute in achieving the SDGs. We investigated whether stakeholders such as consumers, job-seekers, and investors support companies' SDGs contributions in hypothetical settings. We randomly assigned respondents to information treatment and non-information treatment groups. One group is given information about the inherent nature of the SDGs so that we can determine whether their preferences would change when information is given. The results showed that stakeholders selected the companies contributing to the SDGs, reacted to the information positively, and supported companies gaining profit from SDGs contributions. These findings suggest that the SDGs can function as business norms.

Yamane, T., & Kaneko, S. (Under review). Sustainable Development Goals as a Norm for Corporate Behavior: A Randomized Conjoint Experiment on Stakeholder Decisions.

Sustainable Development through Collaboration with Universities (Toward the Formation of the Higashi-Hiroshima International Research Center)



Hironori Takagaki
Mayor of
Higashi-Hiroshima City



Ceremony for Conclusion of
Agreement

Many of the 17 goals set forth in the SDGs are consistent with the measures to be taken by the city, such as healthcare and welfare, women's participation, job satisfaction and economic growth, maintenance of the foundations for industrial and technological innovations, community development where people can continue to live in, and measures against environmental problems. As many municipalities view "sustainable community development" as a common issue, these SDGs share much in common with the issues arising from the socioeconomic conditions of Japan. These goals will be reflected in the Fifth Comprehensive Plan, which is currently being drafted. In October 2019, Hiroshima University signed the "Agreement Concerning the Formation of Higashi-Hiroshima, the International Research Center," and the university and local communities began working together to further community development. I believe that Hiroshima University has a very large role to play in the sustainable development of this city, and I expect that this university will play a leading and central role in various situations as we work to further promote cooperation.

Smart biosensing that contributes to environment and medicine

Consolidated Research for
Biogenic nanomaterials

Director:

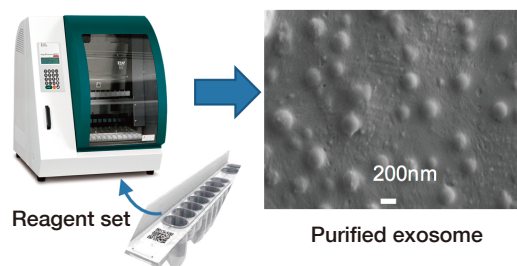
Akio Kuroda, Professor,
Graduate School of Advanced
Sciences of Matter



At the Smart Biosensing Research Center, we are working to develop new biosensor devices as well as automate and miniaturize biosensors by integrating bio-systems and physical systems. Biotechnology alone often ends in the proof-of-concept stage, but at our center, we also change for the implementation in collaboration with faculty of physical sciences and industrial workers. For example, we have commercialized the world's first asbestos detection system based on asbestos-binding protein. Currently, we are working on the challenge of automating this technology. Environmental biosensing also include detection technology for marine microplastics. Meanwhile, as medical biosensing, we focus on exosomes, which have been recently promised in the field of early diagnoses of various diseases. We are developing an automatic separation device for exosomes through open innovation in cooperation with companies. Through environmental biosensing, we believe that we will contribute to “Goal 11: Sustainable cities and communities” and “Goal 14: Life below water” of the United Nations SDGs (Sustainable Development Goals). We also believe that we will contribute to “Goal 3: Health and Welfare for All” through medical biosensing. In the future, we intend to devote more efforts to the development of human resources who will be responsible for building a sustainable society through smart biosensing research.



Detection system for airborne asbestos release
in environment



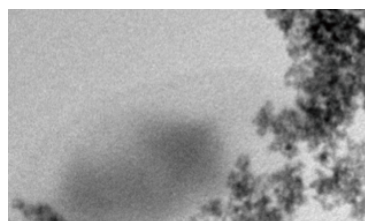
Automated exosome purification system
that contributes to diagnosis

Clarifying environmentally friendly semiconductor manufacturing methods

Integrated Research Center for Smart Biosensing

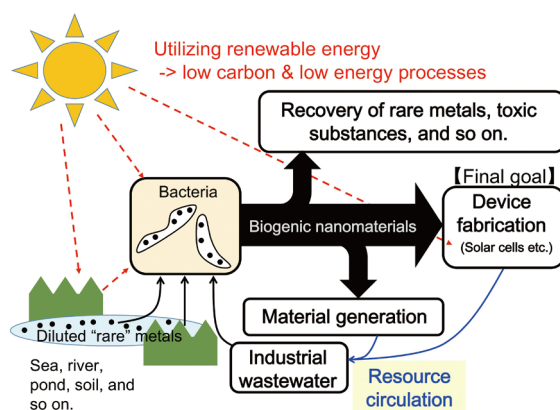
Director:

Yoshiko Okamura, Professor,
Graduate School of Integrated
Sciences for Life



Biogenic nanoparticle crystals and producing bacterium

Currently semiconductor crystal growth is performed by large-scale apparatuses such as MOCVD (metalorganic chemical vapour deposition) apparatus and MBE (molecular beam epitaxial) apparatus, and uses gases that are extremely toxic and prone to ignition and explosion at extremely high temperatures. Semiconductor devices are important products supporting our social infrastructure, thus unless innovative alternative technologies emerge, the same production methods will be continuously used no matter how much energy they produce, how much carbon dioxide they emit, and how much toxic gas they use, which places a burden on the environment. On the other hand, some bacteria can synthesize the same kind of crystals as compound semiconductor crystals at room temperature and normal pressure. We believe that if this bioprocess can be diverted to semiconductor crystal growth, we can propose an ultra-low carbon semiconductor crystal synthesis method. With this in mind, We, at the Consolidated Research for Biogenic nanomaterials, aim to synthesize metallic nanoparticle crystals by bacteria (biogenic nanoparticle crystals) and to develop an ultra-low-carbon solar cell materials toward departure from conventional production methods involved in high-energy input and high-carbon dioxide emissions, in order to develop a technology for low carbon and sustainable society. The advantage of using bacteria is that they can selectively absorb heavy metal ions at low concentrations, which allows them to recycle metals (heavy metals and rare metals) from waste water. Developing non-rare metal materials is also a challenge in semiconductor manufacturing, but we expect that achieving complete recycling will make it possible to continue using today's semiconductor materials. In this way, the crystal synthesis process by bacteria has the potential to realize a sustainable society, and we are studying to elucidate this bioprocess in detail and to link it to mass production methods.



Base Philosophy "Low-Carbon, Low-Energy Processes"

Prediction of natural disasters through elucidation of plate convergence region

Hiroshima Institute of Plate
ConvErgence Region Research (HiPeR)

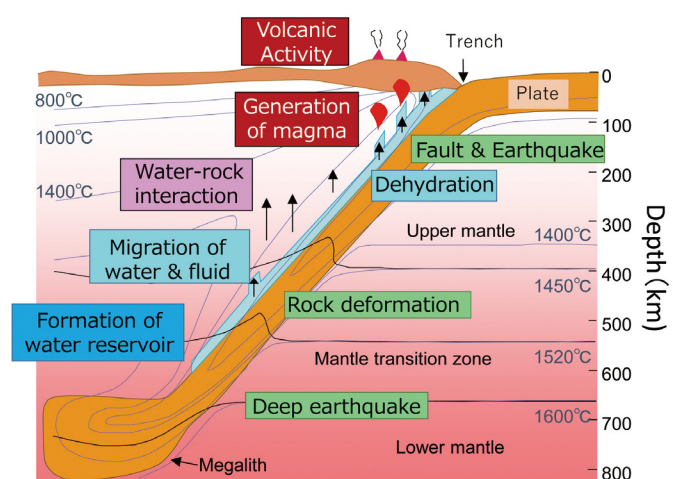
Director:

Toru Inoue, Professor, Department of
Earth and Planetary Systems Science



Observation of the Earth Science phenomena
occurring in the plate convergence region

A variety of natural phenomena and dynamic processes that are important in geosciences are intensively occurring at the “plate convergence region”. In order to comprehensively clarify these important activities, this research center divides them into three main processes and conducts strategic research. The three main processes are “the circulation of rocks and water inside the earth”, “elementary mechanisms of fault motion”, and “the magma generation processes”. The keywords that are particularly important are “high-pressure”, “synchrotron radiation”, “water”, “earthquake”, and “magma”. At our center, we are working to clarify the phenomena of plate convergence from the point of view of material science by integrating “experiment”, “monitoring”, and “field survey and observation of natural samples”. Globally, the “plate convergence areas” are closely associated with the densely populated coastal areas. The natural disasters such as earthquakes and volcanic activities occur frequently at such “plate convergence regions”. Reducing damage from these natural disasters is an important issue for realizing a sustainable society. At present, although it is not scientifically possible to prevent natural disasters, it is possible to clarify the mechanisms of the phenomena and predict the scale of the disasters. This will help to minimize the human damage. We believe that by studying the dynamic processes of the Earth, our research center should be able to predict the severity of natural disasters on a global scale and contribute towards mitigating disasters that can potentially be perilous to the mankind.



Various phenomena occurring in the plate convergence region

Linking basic research to the development of livestock technology

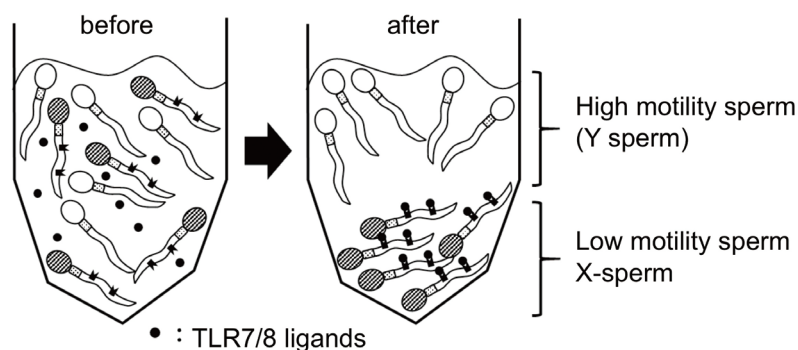
The Research Center for
Animal Science

Director:

Yukinori Yoshimura, Professor,
Graduate School of Biosphere Science



The purpose of the Translational Research Center, which links basic research to technological developments relating to livestock, is to develop capabilities to improve the sustainable production of livestock, develop effective nutrition control and management technology for livestock in harmony with the environment, and ensure livestock health for producing safe livestock products. We are involved in initiatives that newly industrialize livestock and dairy production for Society 5.0 by translating novel basic research into industrial applications and hope to offer them to the rest of the world, including the Asian region, while forming domestic and international networks centered around Hiroshima University. In particular, in the research on livestock reproductive science, we clarified the functional difference between the X sperm and Y sperm for the first time in the world, and from that, we developed a simple method for segregating male and female production. In research on dairy feeding management, the functionality of nutrients was clarified, and industry, academia, and government are working together to develop an advanced nursing program that ensures the health and labor-minimization of calves. Through these efforts to implement basic research in society, we intend to make further efforts to develop human resources who will be responsible for building a sustainable society.



The world's first identification of the conditions under which
the X sperm and Y sperm exhibit functional differences

Establishment of an effective drug delivery system with space-time control

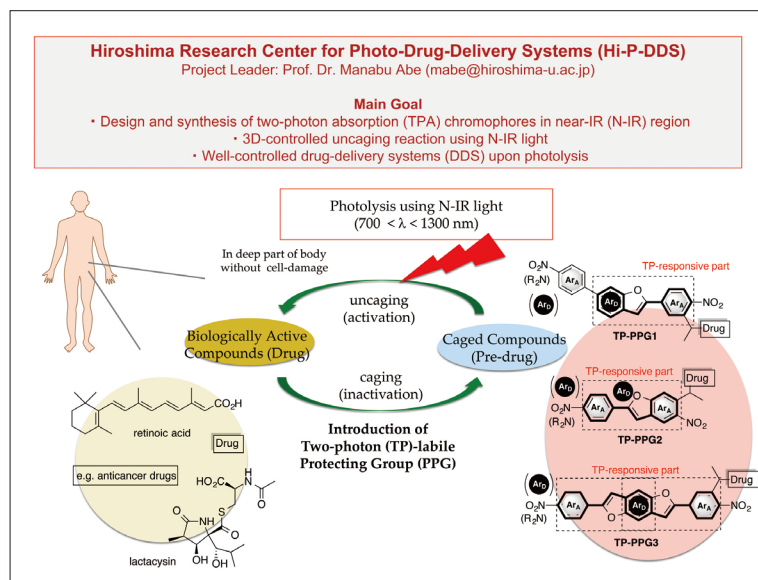
Hiroshima Drug-Delivery Research Center Using Photoirradiation

Director:

Manabu Abe, Professor,
Graduate School of Science



Research to determine where and how biologically active substances function in tissues in vivo is directly linked to the elucidation of vital phenomena, contributes to the development of drugs for diseases faced by mankind, and contributes to the formation of a prosperous society and its sustainable development. At this research center, researchers from Hiroshima University, who are familiar with “chemistry capable of designing and creating drugs,” “photophysics and chemistry capable of manipulating light,” “pharmacology capable of measuring drug efficacy,” and “physiology capable of using drugs in medical practice,” have gathered to develop a drug delivery system capable of contributing to society in the near future by vigorously conducting basic research on the mechanism of action of physiologically active substances. Specifically, we have designed and chemically synthesized the chromophore of a photo dissociative protecting group capable of absorbing two photons of near-infrared light ($650 \text{ nm} < h\nu < 1050 \text{ nm}$), which can reach deep parts of in vivo samples. We have constructed a system that generates biologically active substances through optical control. As a result, we are promoting research in the medical field that can truly contribute to society.



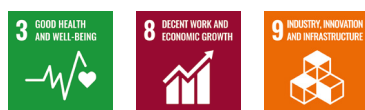
Space-Time Control to Deliver Drugs Where Needed

Invention of innovative diagnosis and treatment of depression

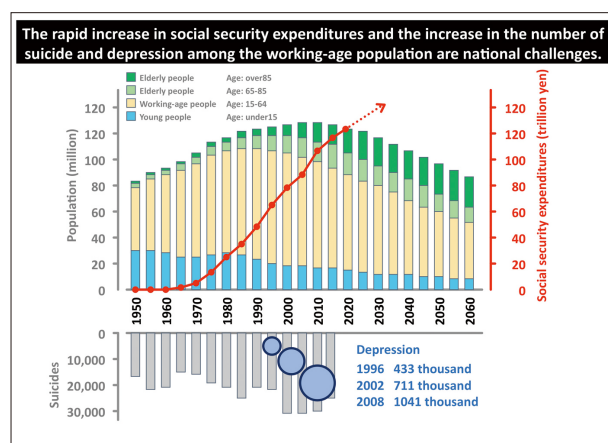
Research Center for
Innovative Diagnosis and Treatment
of Depression

Director:

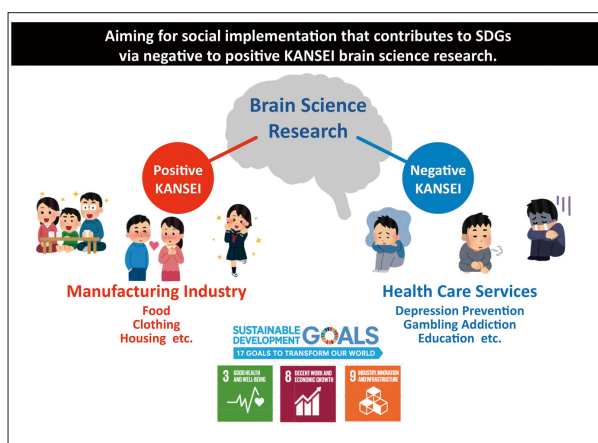
Shigeto Yamawaki, Professor
(Special Appointment), Brain,
Mind and KANSEI Sciences
Research Center



No fundamental curative treatment exists for depression because its diagnosis still relies on the subjective assessment of the doctor. With the support of AMED Brain Science Research Strategic Promotion Program, this center is leading research on depression in Japan as the team leader responsible for elucidating the pathogenesis of depression using the latest brain science. Taking advantage of this strength, we are working together with AI researchers to develop objective diagnoses of depression and therapies based on them. While social security costs are increasing, depression in the working-age population is rapidly increasing, and the development of objective diagnostic and therapeutic methods for depression is becoming an urgent social issue. Depression has become a major issue worldwide, and a solution is expected to make significant contributions to SDGs, specifically "Goal 3: Good health and well-being of people" and "Goal 8: Decent work and economic growth." We also believe that the Center for Brain, Mental, and KANSEI Sciences, which is based on visualization technology for KANSEI developed at the COI Kansei Innovation Center, will serve as a platform for business applications in the manufacturing and healthcare industries, thus contributing to "Goal 9: Industry, innovation and infrastructure." This is a one-of-a-kind research center capable of conducting negative to positive KANSEI brain science research. In the future, we will conduct research with the aim of creating a happy society in which people can share and understand each other, and further contribute to international peace. We will also devote more efforts to building new academic systems and developing human resources that transcend fields.



The rapid increase in social security expenditures and the increase in the number of suicides and depression among the working-age population are national challenges.



Aiming for social implementation that contributes to SDGs via negative to positive sensitivity brain science research

Progress report on transdisciplinary study “peace and sustainability”

Network for Education and Research
on Peace and Sustainability (NERPS)
at Hiroshima University

Director:

Shinji Kaneko, Professor,
the Graduate School for International
Development and Cooperation (IDEC)



Hiroshima University's Network for Education and Research on Peace and Sustainability (NERPS) held its first Hiroshima Dialogue Forum on the Sustainability-Peace Nexus in the Context of Global Change at the Higashi-Hiroshima Campus on August 10-11, 2019. Thirty-five experts from academia and the public/private sectors discussed the linkages and interactions between peace and sustainability against the backdrop of the complex and drastically changing global environmental goals and SDGs, in particular “Goal 16: Peace, Justice, and Strong Institutions.” Representatives of international organizations, governments, municipalities, private companies, and international NGOs from Austria, Bangladesh, Bulgaria, China, India, Japan, the Philippines, Republic of Korea, Thailand, the United Kingdom, and the United States gathered at the forum to identify research gaps and policy issues related to peace-sustainability nexus. The lively discussion by participants over the two days focused on high priority research themes on the environmental, economic, and sociopolitical drivers that undermine or reinforce the relationship between peace and sustainability. The forum's first achievement is the collection of research papers, viewpoint articles, and critique essays. They are scheduled to be published in the international journal “Sustainability Science” in May 2021. The purpose of this special issue is to evaluate sustainability sciences and deepen the understanding on the relationship between peace and sustainability by examining the complex and dynamic interactions between human societies and the global system and by providing solution-oriented knowledge about the coexistence of sustainable development and peace. A follow-up workshop was scheduled on February 3, 2020 at the Higashi-Hiroshima Campus to set up a joint research theme based on the research theme raised in the forum. A series of public lectures was also delivered by researchers from Columbia University, ETH Zurich, Tohoku University, and Hokkaido University to disseminate their research with students and other academic staff of Hiroshima University.

NERPS plans to hold the second Hiroshima Dialogue Forum in 2021.



Forum's detailed website

Japanese : <https://nerps.hiroshima-u.ac.jp/>

English : <https://nerps.org/>

About contributions to papers

<https://doi.org/10.1007/s11625-019-00737-1>

Astrobiology and SDGs



Hikaru Yabuta

Professor,
Graduate School of
Science

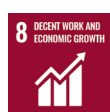
Where did we come from? From where and how did life first emerge on this planet? How was the Earth that nurtures life created? How was the solar system that created the Earth and other planets born? As we try to unravel the past, we find that revealing the origins of life is closely linked to revealing the origins of the universe. Approximately 4.5 billion years ago, the earth and other planets were born through the accumulation of carbon, ice (water), and minerals as principal components, and the formation of microplanets, all of which grew through coalescence. Four to six hundred million years later, a large number of water-and carbon-containing celestial bodies are believed to have collided with the Earth to provide the materials for the atmosphere, sea, and life. We were just dust that had been floating in space in the past. The Earth that was created in this way is the only habitable object that we know of, and it has been sustaining life for approximately 4.5 billion years. The Earth differs from other celestial bodies in the solar system in that it retains the oceans on its surface; there is the presence of plate tectonics, which circulates materials and contributes to climate stabilization. It is possible to keep the ocean on the surface of the Earth because of the presence of the atmosphere, especially “greenhouse gases” such as carbon dioxide and methane. Many students are surprised when they hear in lectures that greenhouse gases play an important role in the survival of global life. However, it is believed that the cause of global glaciation, which occurred three times in the history of the Earth, was caused by a lack of greenhouse gases for some reason, and that the thawing of the frozen Earth was also caused by greenhouse gases. Since the end of global glaciation about 2.2 billion years ago, the activity of photosynthetic organisms with the ability to “use sunlight as energy” has rapidly intensified. There is a hypothesis that the massive meteorite impact on sulfate rocks during the mass extinction event about 66 million years ago, known for causing the extinction of the dinosaurs, triggered the formation of sulfate aerosols, causing global “sulfate acid rain,” which destroyed ecosystems. These are just a few examples of the history of the Earth and life. If we uncover the past in this way, we can see that the Earth itself had already experienced climate change and the global environmental problems we face today before human life was born on the planet, when the Earth became a snowball, and when dinosaurs existed. Interestingly, there were times when what is now considered harmful was seen as a “gift” in the past. Today’s new energies and resources that humanity is trying to develop are also the functions and products of the living beings which were our ancestors. There are no boundaries between curiosity-driven science and mission-oriented science, which have developed independently of each other. In recent years, the field of comparative planetary science is evolving to explore the celestial bodies inside and outside the solar system in order to learn more about the origins of life by deepening our understanding of the nature of the Earth and of ourselves. Where do we come from and where do we go? In order to take on this question, we must become the “key to solving the future as earthlings” in the interdisciplinary field of astrobiology, which integrates geoplanetary science, astronomy, chemistry, life sciences, and environmental science.

Working style, business, and asset management in the 100-year life

Hiroshima Institute of
Health Economics Research

Director:

Yoshihiko Kadoya, Professor,
Graduate School of Social Sciences



The Hiroshima Institute of Health Economics Research (HiHER) is integrating economics with other fields to make solutions for “work style, business, and asset management in the 100-year life” in Japan, which has the world’s oldest population, and is focusing on expanding the results internationally.

With regard to work style in the 100-year life, we are working with several companies and organizations, including NEC Corporation and the Japan Health Insurance Association, to identify stressors for workers and to study how improvements to the working environment lead to the health of workers and labor productivity, with a focus on the SDGs of sustainable health and growth/employment.

As for the business in the 100-year life, we are aware of SDGs innovation, and we are working to develop products by measuring the added value of product designs that do not rely solely on vision, specifically “tactile impression,” for elderly people who are more likely to have a relatively low visual acuity than younger people. This paves the way for social implementation together with researchers in engineering, such as Professor Yuichi Kurita, and chemical manufacturers, including the DIC Corporation.

In addition, we are researching how to protect and sustainably manage assets of the elderly in accordance with the SDGs of “Peaceful Concepts” in the 100-year life. Specifically, in collaboration with the Research Institute of Science and Technology for Society (RISTEX) and other organizations, research is being conducted to protect the assets of the elderly from the risk of communication fraud by identifying vulnerable factors; create a mechanism to protect assets in the event that the cognitive functions of the elderly decline and result in conditions like dementia; and finally improve financial literacy that enables sustainable asset management. Japan is the global leader in terms of population aging, but the resolution of the associated issues is a common problem that will become serious not only in other industrialized countries but also in many regions, including East Asia. In the future, we intend to make further efforts not only to resolve the issues facing Japan but also to expand the results of these efforts overseas.



Experiments to investigate how the tactile sensation of products affects consumers’ “Willingness to Pay”



Authors sharing their experiences in Japan with overseas researchers



Experimental staff attach emotional status meters to workers

New social implementation through the integration of mathematical sciences and life sciences

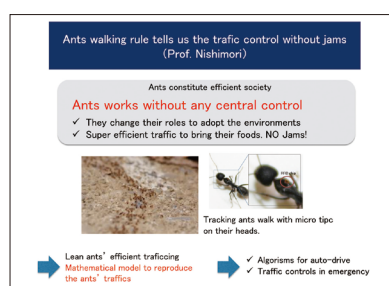
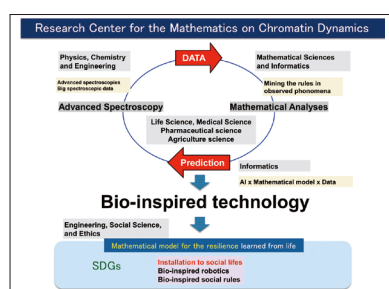
Research Center for the Mathematics on Chromatin Live Dynamics

Director:

Shinichi Tate, Executive Vice President (Research)



The Chromatin Dynamics Mathematical Research Center is pioneering new genomics research through the integration of mathematical science and life sciences. Current genomics is based on “chemical” data, such as genome sequence and modifications to the genome. However, little has been done to elucidate the “physical” aspects of how genetic information is regulated by changing the three-dimensional structure of the nucleus via various external stimuli. We are pushing this issue through close cooperation between advanced measurement and mathematical science. We have already accumulated physical kinetic data of nuclear loci on a scale unprecedented in the world, and we have successfully acquired electron microscopic images of the world’s first three-dimensional nuclear chromatin structure. By combining mathematical modeling of non-linear phenomena with automatic AI analysis, we clarify the actual state of three-dimensional genome structural changes in the nucleus. Our center is strong in data analysis by mathematical modeling that uses non-linear phenomena. Various mathematical modeling techniques developed through the above-mentioned advanced research include mathematical models that automatically change walking patterns, which were developed based on the models of the collective movement of ants without traffic congestion and models built on the behavior of horses in which leg movements change depending on speed. We are also conducting research to integrate the rational mechanisms of living things into mathematical models and implement them in society. With regard to the development goals set forth in the SDGs, we plan to contribute to “Goal 9: Industry, Innovation, and Infrastructure,” “Goal 14: Life Below Water,” and “Goal 15: Life on Land.” Even simple mathematical models show that a society in which all players pursue maximum performance is unstable as a system, eventually leading to extreme profit bias and disappearance of others. Each individual has been able to achieve and evolve a sustainable life by pursuing appropriate mutual restraint and profit while maintaining diversity in a biological population. Intracellular information control also maintains the resilience of various molecules to external environmental changes through appropriate mutual repression relationships. We believe that we can realize a form of social system management that mimics living things by breaking down the resilience that living things have acquired through evolution into a mathematical model of phenomena. Through the development of these models, we believe that we can contribute the necessary measures and regulations to the above-mentioned SDGs targets.



Toward a new energy-saving society led by left-right mirror symmetry

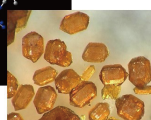
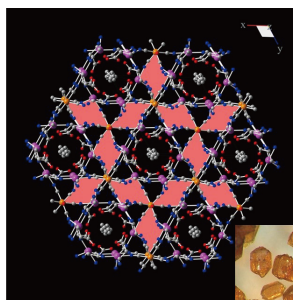
Chirality Research Center
(CResCent)

Director:

Inoue Katsuya, Professor,
Graduate School of Science



The Chirality Research Center uses the relationship between the right-hand and left-hand shapes (called chirality) to conduct new research on physical properties. The study of chiral molecules can be described as a Japanese forte, considering that it was a Japanese who was one of the recipients of the Nobel Prize on chiral molecule research. Chirality is used to create new magnetic and electrical properties. Applications include high-efficiency information transfer by spin. We are aiming to develop IT devices that consume much less power and are more efficient than ever before. With respect to the target SDGs, we believe that we can contribute in terms of energy conservation and high-efficiency.



Photograph of the crystal of a chiral magnetic substance (bottom right) and crystal structure. A transparent magnet made of carbon and nitrogen, hydrogen, oxygen, manganese and chromium.

I have placed my hopes in Hiroshima University and NERPS !



Misumi Sachiko

Director General
at JICA Chugoku

I have great expectations from Hiroshima University's SDGs efforts. As research institutes, universities are indispensable to the achievement of SDGs through the accumulation and creation of knowledge. In their role as an educational institution, universities are also places for developing human resources to support a sustainable society. This is not the only thing. SDGs are significantly different from previous development goals (the Millennium Development Goals), as developed countries are also involved in achieving these goals. As a result, the perspective of thinking about the relationship between domestic and foreign events has become more important to us, but there are not many organizations that play a key role in linking local and global events. Hiroshima University is an institution that contributes to the local community and has global networks. I believe that there is none other than Hiroshima University that can demonstrate leadership in promoting SDGs in Hiroshima and surrounding regions. As a partner of developing countries, JICA works to achieve SDGs by offering support. In these efforts, we have received extensive cooperation from officials of Hiroshima University, mainly from the Graduate School of International Development and Cooperation. I believe that the promotion of SDGs can also be an excellent chance to deepen and develop the relations between Hiroshima University and JICA.



IDEC International Festival

Aiming to be a global research and education center for liver and digestive organs

Research Center for Hepatology and Gastroenterology

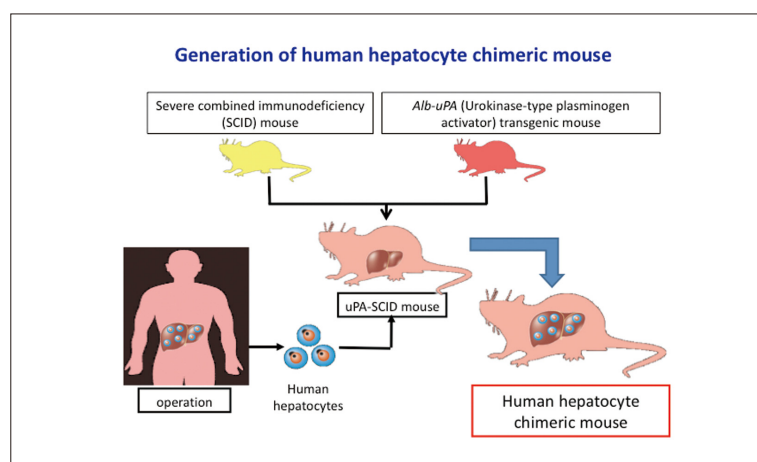
Director:

Kazuaki Chayama, Professor,
Graduate School of Biomedical
and Health Sciences (Medicine)



Training of researchers and coordinators through symposia and seminars

The Liver and Gastrointestinal Research Center was established by Professor Kazuaki Chayama of the Department of Gastrointestinal and Metabolism (center leader), Professor Hideki Ohdan of Gastrointestinal and Transplantation Surgery (center sub-leader), and Chise Tateno, the Director of Phoenix Bio Co., Ltd. (center sub-leader) for the purpose of conducting research and sharing knowledge on the liver. The center aims to address deaths from liver failure and liver cancer, which are expected to rapidly increase worldwide in the near future, by making use of the technology available only at Hiroshima University's Liver and Gastrointestinal Research Center to strengthen collaborative research systems with various sectors and develop new therapies for liver disease. In addition, through the course of the research, we will provide education for physicians, graduate students, postdoctoral researchers, and coordinators and provide feedback for research courses. Through this approach, we will foster medical professionals who have a worldwide research base and a research mindset. Key research areas include 1) the development of novel diagnostic methods and therapies for liver disease using human genome information, 2) the elucidation of the pathology of viral hepatitis using cultured cells and animal models and development of novel therapies, and 3) the elucidation of the molecular mechanisms of nonalcoholic steatohepatitis and the search for novel biomarkers. In particular, we are conducting animal research with the aim of developing more effective therapies for patients with refractory viral hepatitis using a hepatitis virus infection chimeric mouse model that was originally developed at Hiroshima University, in which mouse livers were replaced with human hepatocytes.



Human hepatocyte chimeric mice in which mouse livers were replaced with human hepatocytes

Thinking about peace at a university pursuing peace

Heiwa Circle, Hiroshima



With the awareness that this is the last generation that can hear these stories directly, we regularly hold “Exposure Testimonial Meetings” at the university to learn about peace through the stories of atomic bomb survivors and war survivors who share their experiences and the horrors of the atomic bombings. We also hold an exhibition of war materials at the Hiroshima University library in May every year, providing students with the opportunity to learn about the history of war and think about peace. We also participate as volunteer staff in exhibitions and events related to the atomic bomb and war that are held outside the university. Through these and other activities, we are deepening our understanding of peace from the perspective of and activities that are unique to university students.



Twitter of Heiwa Circle, Hiroshima
<https://twitter.com/genhiro0806>

Contributing to the Earth through assistance in farming

Agricultural Circle, Taguchimushi



Working as an agricultural circle where vegetables are grown and harvested in fields near Hiroshima University, the center conducts volunteer farming activities in the prefecture in cooperation with the Japanese Agricultural (JA) cooperatives. Major volunteer activities include thinning and harvesting of fruits such as tangerines, lemons, and biwa in the Akitsu area in the southern part of Higashi-Hiroshima City, as well as lemon harvesting in Ikuchijima, Onomichi City, Hiroshima Prefecture. In addition, as a member of the Tanada Reclamation Project in the Hongo area of Aki-Takada City, Hiroshima Prefecture, we are engaged in reclamation work on abandoned tillage land and activities to spread the appeal of the Tanada field in social media, etc. In this way, we are giving vitality to communities by engaging with regions that suffer from personnel shortages and regions that want to incorporate young people's ideas.



Website of Taguchimushi
<https://taguchimushi.jimdo.com/>

Twitter of Taguchimushi
<https://twitter.com/taguchimushi>

Sustainable university town that Higashi-Hiroshima City and Hiroshima University aim for

Hiroshima University×Higashi-Hiroshima City RDT
(Regional Design Team)

Controlling Manager : Shinji Kaneko



Hiroshima University and Higashi-Hiroshima City Hall have jointly adopted the Sustainable University Town Initiative driven by Academic Enterprises, which is a project proposed by the Japanese Ministry of Education, Culture, Sports, Science and Technology for “Social Issues Solved by Science and Technology Innovation (DESIGN-i)” in FY2019. This is an attempt to make Higashi-Hiroshima City the city of choice for talented young people from around the world and promote global brain trust to influence the city’s population size. The project will address the needs of not only citizens living in the Higashi-Hiroshima region but also citizens of diverse industries, fields, and age groups across regional boundaries, thereby creating a new image of Higashi-Hiroshima that appeals to citizens inside and outside the region, and formulating a shared “future vision” to realize. In cooperation with people living inside and outside the Higashi-Hiroshima region who have excellent track records and high motivation for town development (Regional Design Team (RDT)), we will also identify regional issues for realizing our vision for the future. In addition, we hope that universities and companies based in Higashi-Hiroshima will develop innovative initiatives aimed at resolving regional issues in conjunction with human resources from various industries, fields, and age groups both inside and outside the region, thereby realizing a new vision of Higashi-Hiroshima that appeals to citizens in the region and beyond.



Website of Hiroshima University×Higashi-Hiroshima City
RDT (Regional Design Team)

Japanese

<https://design-i.hiroshima-u.ac.jp/>

English

<https://design-i.hiroshima-u.ac.jp/en/>

Reconstruction support after the extensive torrential rain disaster in western Japan

Volunteer Circle, Iris



After the torrential rain in western Japan in July 2018, students who participated in volunteer activities joined hands for an initiative based on the idea that continuous support was needed. In the disaster-stricken areas, we provided assistance for the operation of volunteer centers and removed debris. We also recruited over 200 student volunteers at Hiroshima University in July 2018 alone, and we dispatched them in August 2018. We continue to provide support to people who have suffered disasters and deliver what is truly necessary for the local community. In addition, we provide information on disasters and report on our activities in schools in order to raise awareness of disasters and disaster prevention. We also hold study groups and activities in cooperation with other volunteer circles and NPOs within the university. We continue to conduct a wide range of support activities, including fund-raising activities, provision of supplies to disaster areas outside of Hiroshima Prefecture, and participation in local cafeterias to create communities in disaster-stricken areas.

Volunteer Circle, Iris

Facebook

<https://www.facebook.com/irishiroshima2018/>

Twitter

<https://twitter.com/irishiroshima>



A market connecting the “people” of Higashi-Hiroshima

Higashi-Hiroshima, Hitomusubi



The “Hitomusubi” space, packed with the charms of Higashi-Hiroshima City, is a place where you can encounter the lovely “people” and “things” of the city. The “Hitomusubi” space is led by its founder Yoshimasa Yamada and held once a month by students from Hiroshima University. Modeled after the farmers’ markets in the U.S., the space has over 20 businesses present, including stalls for face-to-face sales of fresh vegetables by local farmers, confectionery and bakery shops, and general stores, while workshops are hosted by student groups that can be enjoyed by both parents and children. Many sponsors are continuing their activities under the common goal of moving around people, things, and money in the region by sharing the appeal of Higashi-Hiroshima City.



Higashi-Hiroshima Maruhi Net

<https://hhhitomusubi.net/syuttyou-hitomusubinoba-10-1/>

Improving the skills of in-service teachers and prospective teachers

Hiroshima SDGs Consortium



This project was launched to improve the skills and training of teachers who can develop the global competencies required to achieve SDGs. It works in collaboration with universities, boards of education, companies, and other organizations in Hiroshima Prefecture. In FY2019, the Japanese Ministry of Education, Culture, Sports, Science and Technology was selected for the UNESCO Activity Expenditure Grant (ESD-Promotion Project for Achieving SDGs). Workshops on SDGs and ESD are held for in-service instructors and students aspiring to become future leaders. Workshops are also held for the purpose of cooperating with the UNESCO ESD Grand Prize projects and facilitating exchanges with UNESCO schools and consortia nationwide. In addition to providing opportunities for participants to deepen their understanding and knowledge of SDGs, we also hold workshops that can be applied to schools and provide opportunities for students to learn lessons that can be put into practice.



Website of Hiroshima SDGs Consortium

<http://www.sdgsconsortium.hiroshima-u.ac.jp/>

Bringing university reform and founding principles into the mainstream

The long-term vision “SPLENDOR PLAN 2017” embodies the five principles that have also been shared as the spiritual pillars in an action plan aimed at “establishing Science for Sustainable Development.” In response, Hiroshima University has brought comprehensive university reforms, including the restructuring of graduate schools and the unification of all human resources, as well as its founding principles into the mainstream. NERPS will strive to build a university-wide SDGs system by linking these initiatives with each other.

○Business Administration and IR: Estimation of Contributions to AKPI®/BKPI® and SDGs

Since 2013, Hiroshima University has been using the proprietary index AKPI®/BKPI® to analyze IRs. This is part of an IR initiative to quantify the annual key performance indicators for all 1700+ faculty members and check the balance between the overall score and the items. They are used by faculty members, courses, and graduate schools not only in various university management decisions, but also to optimize their own activities. Since this fiscal year, we have integrated SDGs expertise judgment, developed methods to measure their contributions to SDGs, and have begun testing in order to see which SDGs faculty members can contribute to the achievement of their respective goals. As a result, we were able to evaluate the degree of contribution to each of the target SDGs, including classroom management, PhD development, SCI papers, external funding, and internationality.

○Reorganization of graduate schools

Human resources with extensive education, comprehensive/multifaceted perspectives, and deeper specialization, which cannot be achieved by undergraduate education, are necessary to cope with the diversification, complexity, and sophistication of the issues that need to be solved. New graduate schools are needed that can conduct interdisciplinary and cross-sectoral educational research that go beyond the boundaries of conventional research courses in order to build a global educational and research center that creates and implements peace science as a science for sustainable development, which is stated as a mission. For these reasons, we broadly grouped the 11 departments into disciplines with similar “values,” namely the phenomena (e.g., people, society vs. organisms, life vs. principles of nature) and the interactions with society (e.g., creation of new values / philosophies / culture / education vs. development of new drugs or therapies based on advancements in the understanding of biological phenomena vs. development of new technologies that support a sustainable society) that researchers are primarily interested in, and spent two years to incrementally and comprehensively re-organize these into the four departments of humanities and social sciences, life sciences, science and engineering, and medical sciences.

○Faculty organization reform: Academies

Since 2016, all faculty members have been affiliated with academies, and a system has been established to accurately meet social needs and to plan swift and flexible interdisciplinary education and research projects. If all graduate schools are integrated and reorganized, each faculty member belonging to an academy will be able to participate in various inter-disciplinary educational and research projects that go beyond the previously established faculty and research department organizations specialized in specific fields. Results from highly-specialized educational research projects for solving problems, including challenges to SDGs, can be determined and managed by appropriately utilizing the above-mentioned operational controls and SDGs contribution indicators at the level of faculty members, lectures, and research courses, and strategic action plans can be formulated to achieve their objectives.

○HR reform

Since 2016, the personnel system for faculty has been centrally managed by the university. Human resources initiatives rely on urgency, research capabilities, future prospects, and substitutability. We will analyze and propose how each of these fields can contribute to the implementation of the top-level vision SPLENDOR PLAN 2017. Approval of the results of personnel selection requires objective evidence that can be explained to faculty members in different fields of the personnel committee. As a result, we will be able to secure human resources to pursue peace science as a science for sustainable development, which has been set as a mission, and we will build a system that aims to achieve the goals continuously over a long period of time.

○SDGs Student Awareness Survey

We conducted an SDGs awareness survey to confirm how SDGs are recognized and understood, and to improve SDGs awareness and make it a source of change in individuals' awareness and behavior. From February to March 2019, we received responses from 1,048 students at Hiroshima University. Regarding SDGs awareness, 57% of respondents answered "I have heard about them," of which only 27% said "I am well aware of them." On the other hand, 68% of respondents said they would like to actively get involved with initiatives related to the SDGs at their companies or schools, indicating their interest in SDGs initiatives. We will continue to conduct similar surveys and work on increasing the SDGs awareness of Hiroshima University students.

Tomomi Yamane, Awareness survey at Hiroshima University

<http://ir.lib.hiroshima-u.ac.jp/00048196>



Top: Count Bottom: %	1. Strongly agree	2. Somewhat agree	3. Neither agree nor disagree	4. Somewhat disagree	5. Strongly disagree	Sum	Trend
I hope <u>the municipality I am currently living in</u> gets actively involved in the SDGs.	274 26%	397 38%	298 28%	38 4%	39 4%	1046 100%	
I hope <u>the school/company I currently belong to</u> gets actively involved in the SDGs.	305 29%	411 39%	285 27%	16 2%	26 2%	1043 100%	
If I were to move to a different location in the future, I wish to live in a municipality that is actively involved in the SDGs	210 20%	353 34%	413 39%	46 4%	24 2%	1046 100%	
If I were to get a job or change occupation, I wish to work for a company that is actively involved in the SDGs.	226 22%	386 37%	381 36%	34 3%	18 2%	1045 100%	

External advisor comments



Paul Shrivastava

Pennsylvania State University
Professor and Director of the Sustainability Institute

Hiroshima's Leadership in Peace & Sustainability

Hiroshima has an iconic place in the global peace movement as the root of nuclear non-proliferation. Hiroshima University has innovated in peace studies, education and research for several decades. It has also been a center for learning about sustainability and sustainable development goals. The university's latest innovation is the Network for Education and Research in Peace and Sustainability (NERPS). This global network brings focus to the most important sustainable development goal (#16) of the UN Agenda 2030 – “promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels”. This goal about peace, governance and institutions is a pre-condition for achieving all the other sustainable development goals. Without peace there can be no sustainability. Hiroshima University's assistance in building NERPS is of global historical consequence. The peace-sustainability nexus is simultaneously the most important and the least understood. It represents highly complex interactions among social, economic, political and earth systems and climate variables. The nexus is also hugely consequential because of loss of life and ecological assets resulting from conflicts. Given the ongoing conflicts that affect many parts of our world, the numerous post-conflict societies seeking to become sustainable, and the anticipated conflicts due to climate change displacements, much greater research and educational attention needs to be paid to. NERPS brings together scholars, decision makers, stakeholders, and activists, to inspire transdisciplinary, solutions-oriented, co-creation of knowledge for real-world challenges. My heartfelt thanks to Dr. Shinji Kaneko and Dr. Hassan Virji for the long and arduous preparatory work in creating this global network. Their patient and persistent efforts have brought together scholars, policy makers, and stakeholders from Asia, Europe and the Americas, into an inclusive network. Thanks also to Hiroshima University President Dr. Mitsuo Ochi and Executive Vice President, Dr. Shinichi Tate for their continued support of this effort. The faculty, staff and students of Hiroshima University should be proud of the contribution they are making to world peace and sustainability.



Fumiko Kasuga

Future Earth
Japan Global Hub Director

High expectation for NERPS, which will now make rapid progress

Rapid changes in global climate has seriously affected people's lives. In particular, climate change and disasters are directly linked to hunger and poverty in developing countries with weak economic foundations and arid countries, resulting in unstable political situations. Underlying the rise of the Islamic State in the Middle East was the poor harvest of wheat, while the desiccation of cultivated land in Afghanistan was a major factor for the political instability in the region. Dr. Tetsu Nakamura, who was killed in gunfire, dedicated his life to restoring cultivable land in Afghanistan. As climate crises and ecosystem deterioration progress in the future, the resultant natural disasters and social changes can disturb peace on a large scale. Hiroshima University's Network for Education and Research on Peace and Sustainability (NERPS) is an internationally unique research center that integrates research on global and social sustainability and peace and seeks solutions with social stakeholders. This is an area where Japan and Hiroshima can and should contribute to the world through leadership. Based on the accumulated intra-university, domestic, and international discussions thus far, I believe that it is now time for us to make significant progress. Future Earth strongly supports NERPS through national and international networks.

