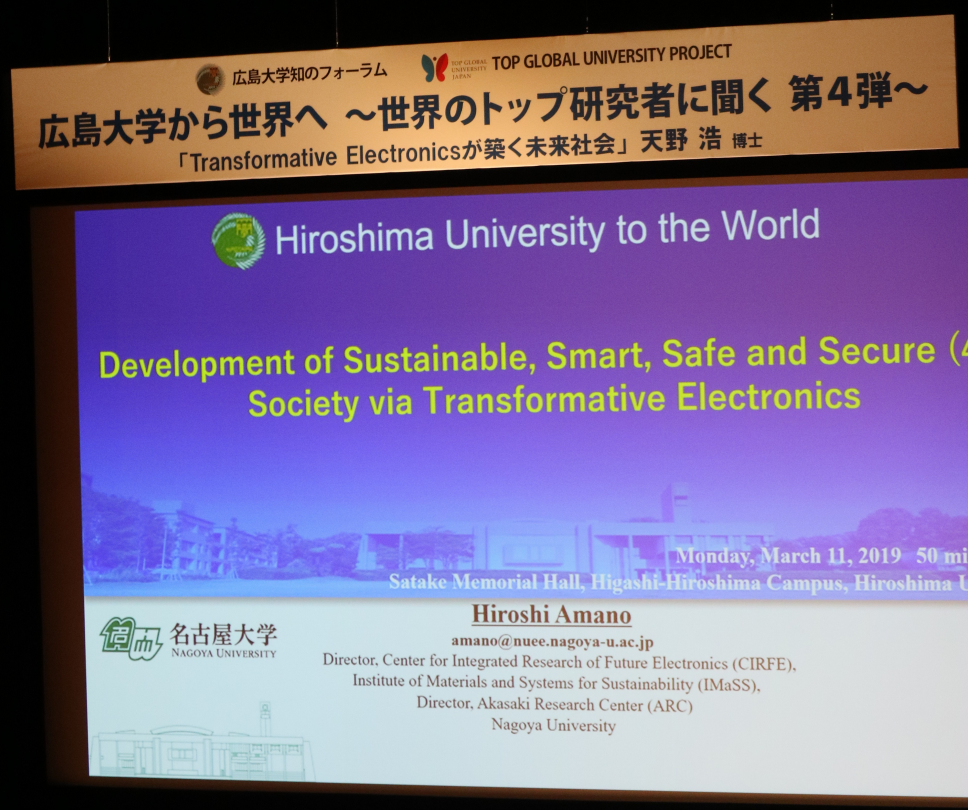
HIROSHIMA UNIVERSITY

HIROSHIMA UNIVERSITY UPDATE

MARCH 2019

Nobel Laureate in Physics



Prof. Hiroshi Amano At Hiroshima University

On March 11th 2019, Hiroshima University held a lecture entitled "From Hiroshima to the World - Wisdom from world renowned researchers" part , inviting Professor Hiroshi Amano (Nobel Laureate in Physics), Nagoya University.

(Find details on Page 4)

UNIVERSITY OF WORLD-WIDE REPUTE AND SPLENDOR FOR YEARS INTO THE FUTURE

HIROSHIMA UNIVERSITY

Embodying its founding principle of “a single unified university, free and pursuing peace,” Hiroshima University is one of the largest comprehensive research universities in Japan. Today, HU is making steady progress as a global university, taking on worldwide challenges and strengthening its global educational network by signing international exchange agreements with universities around the world and opening overseas bases at strategic locations.

CONTENTS

RECENT NEWS

UPCOMING EVENTS

RESEARCH FOCUS

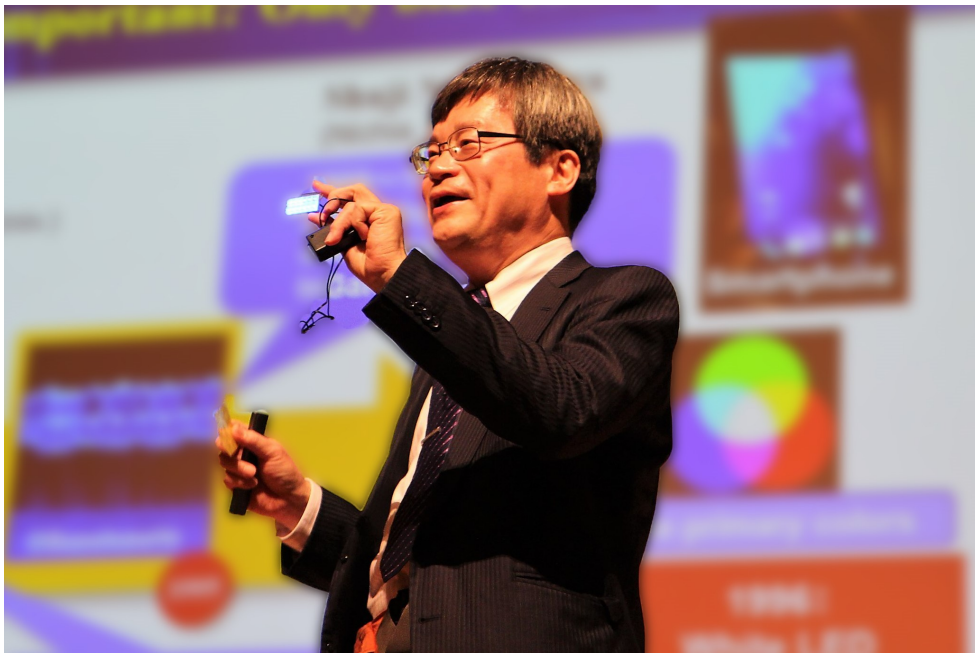
Lecture by Nobel Laureate Prof. Hiroshi Amano

March 11, 2019, at HU Higashi-Hiroshima Campus

Development of Sustainable Smart Society Via Transformative Electronics

On March 11th, 2019, Hiroshima University invited Professor Hiroshi Amano of Nagoya University Institute of Materials and Systems of Sustainability and held a lecture entitled “From Hiroshima University to the world: the 4th edition of wisdom from world-renowned researchers”. There were about 700 participants including local high school students who were engrossed with his lecture.

Professor Amano was awarded the Nobel Prize in Physics 2014 together with Professor Isamu Akasaki and Professor Shuji Nakamura “for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources”.



Professor Amano with the blue-emitting diode

Professor Amano (right) receiving the Commemorative Shield of the Honorary Distinguished Professor

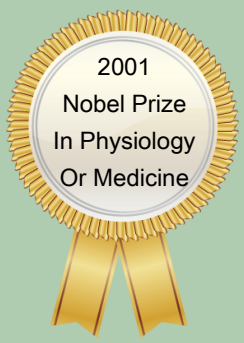
In the lecture Professor Amano said, “It is only through innovation that people can enjoy the profits it brings”. He revealed that he decided to work on LED research since the cathode-ray tube of the computer had a large amount of electricity consumption when he was a university student. He also talked about the challenges he overcame during his research inventing the blue-emitting diode using gallium nitride, which was thought impossible among researchers back then. Professor Amano is now collaborating with companies to develop future innovators.

After the lecture, high school students and HU students asked many good questions, which impressed Professor Amano.

Following the lecture, President Mitsuo Ochi of Hiroshima University awarded Professor Amano with the title “Hiroshima University Honorary Distinguished Professor”.

Lecture by Nobel Laureate Sir Paul Nurse

January 9, 2019, in TOKYO



Future Society Pioneered by Life Science

On 9th January 2019, Lecture Meeting by Nobel Laureate Sir Paul Nurse (2001 Nobel Laureate in Physiology or Medicine))was held in Tokyo.

The Lecture Meeting saw an attendance of about 200 people, including those from universities and companies.

The 2001 Nobel Laureate in Physiology or Medicine, Sir Paul Nurse gave a special lecture, where he presented his Nobel Prize-winning research in a comprehensible way, sometimes with his hand-drawn illustrations.

The Lecture Meeting also saw a presentation by President Mitsuo Ochi, a seminar of “The Frontier Development Program for Genome Editing” selected for the MEXT’s WISE (Doctoral Program for World-leading Innovative & Smart Education)Program, and four talks by HU’s world-leading researchers in the fields of life sciences and medicine.

At the meeting venue, participants had an opportunity to exchange opinions with Sir Paul Nurse and HU researchers. There were quite active exchanges of opinions, which show a high level of expectations and interests in HU.

Through lecture meetings, HU will intend to disseminate information regarding its initiatives for “Research Capability Enhancement” and contributions to local and international communities.

Sir Paul Nurse

HU President Mitsuo Ochi

Five talks from HU’s world-leading Researchers

(From the Left)

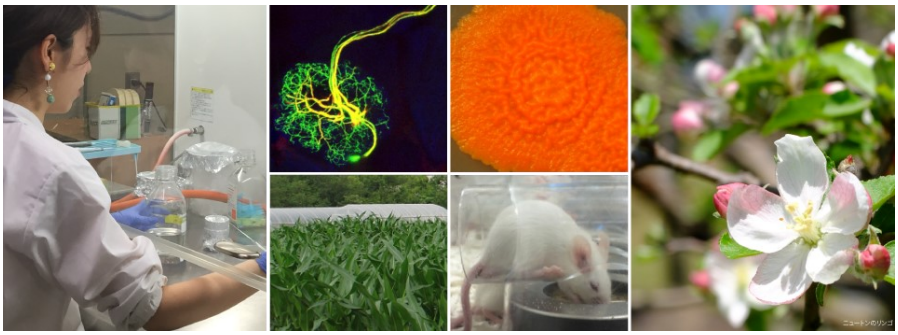
Professor Takashi Yamamoto, Professor Hajime Ogino, Professor Masaoki Tsudzuki, Specially Appointed Professor Shigeto Yamawaki, Professor Junko Tanaka

Two New Graduate Schools Open From April 2019

The Graduate School of Integrated Sciences for Life

New "Graduate School of Integrated Sciences for Life" will be established as a dynamic education and research organization in order to respond to diverse social demands through the organic restructuring and consolidation of existing majors in biology and life sciences.

The Graduate School of Integrated Sciences for Life has a single division, which consists of seven fundamental graduate degree programs. The seven programs, each of which features a systematic curriculum framework, are established by separating a broad spectrum of biology and life sciences – which used to be divided into the four traditional academic disciplines of science, engineering, agriculture and medicine – from the viewpoint of educational effects and the needs of modern society. Each of these seven programs has distinctive keywords and shares some of them with other graduate degree programs, thereby enabling the formation of a group of complementary and integrated programs.



★Find More Information from:

The Graduate School of Integrated Sciences for Life Website

https://www.hiroshima-u.ac.jp/en/ilife

The Graduate School of Biomedical and Health Sciences

New “Graduate School of Biomedical and Health Sciences”, reorganized into 2 divisions from current 5 majors, will be established in April 2019.

The aims of the Graduate School of Biomedical and Health Sciences are as follows:

1. To develop advanced education and research for 4 medical fields; Medical Sciences, Dental Sciences, Pharmaceutical Sciences and Health Sciences with deepened basic research, through integration and collaboration in the fields

2. To increase the length of healthy life expectancy with response to all stages of life

3. To foster the personnel capable of building a new system for health, medical care and nursing

4. To encourage students to acquire broad perspectives beyond borders of departments by taking common specialized subjects

★Find More Information from:

The Graduate School of Biomedical and Health Sciences

https://www.hiroshima-u.ac.jp/en/bhs

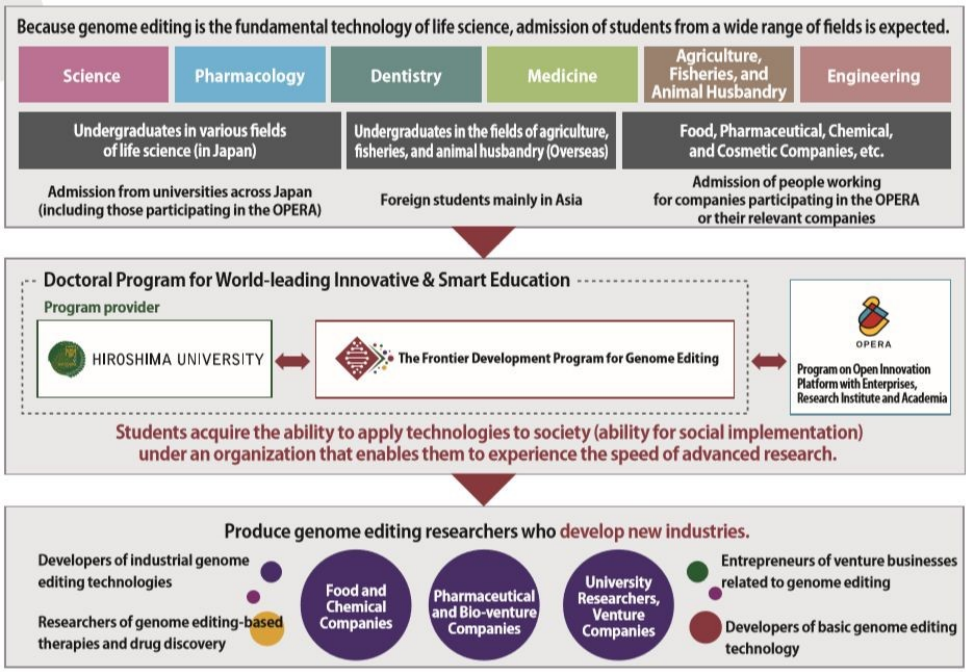
Opening up the future with Genome Editing

The Frontier Development Program for Genome Editing to be launched in April 2019

In 2019, Hiroshima University will launch the Frontier Development Program for Genome Editing, an integrated Master's-PhD course, with the aim of training PhD students to introduce innovations to society.

Genome editing is a new biotechnology that makes it possible to rewrite the genomic information of various living organisms at will, using an artificial DNA-cutting enzyme (genome editing tool). Basic genome editing research has advanced considerably. As it is just a matter of time before we see the industrial and medical application of genome editing in the field of biofuel, breeding, and drug discovery, the ethical aspects of genome editing should be considered when scientists conduct cutting-edge R&D in this area of biotechnology.

This program will establish the Life Science Course (5-year curriculum) and the Medical Course (4-year curriculum) in order to provide students with opportunities to acquire basic and applied knowledge and to learn techniques of genome editing. This program enables students to master genome editing technology and connect it directly to industry.



One of the features of this program is that students are trained to conduct cutting-edge and practical research through collaboration with companies participating in the Program on Open Innovation Platform with Enterprises, Research Institutes, and Academia and partner institutes.

This program will start to accept students in April 2019, and will be implemented as a degree program across several graduate schools.

Life Science Course (5-year curriculum)

In the first and second years, students will learn basic and advanced genome editing techniques. From the third year, they will conduct research utilizing the knowledge they have acquired. Through basic courses on social implementation of technologies and internships, they will be trained to become experts able to work at the cutting edge of genome editing technology.

Medical Course (4-year curriculum)

After systematically learning the basic and advanced genome editing technologies in the first and second years, students will conduct research for their doctoral thesis, utilizing knowledge that they have acquired. In addition, through internships at domestic and overseas partner institutes, they will be trained to be able to work at the cutting edge of genome editing in the medical field.

★For further information:
The Frontier Development Program for Genome Editing website
https://genome.hiroshima-u.ac.jp/en/index.html

HU's Actions in Response to Torrential Rain in 2018

In July 2018, a record torrential rain hit many parts of Western Japan, causing simultaneous landslide-related and river flooding disaster after another in many prefectures including Hiroshima, Okayama, and Ehime, which all saw many deaths and missing persons.

Hiroshima University also had some damage in and around the premises of Higashi-Hiroshima campus.

In response to this torrential rain, HU set up a Disaster Investigation Team for the Torrential Rain 2018, with the President as the head. Actions had been conducted with rapidity: Checking the safety of each student, faculty & administrative member, class cancellation and scheduling make up class, arranging transportation to Higashi-Hiroshima campus, etc.

Special messages from the President concerning the Torrential Rain had also been e-mailed to HU students, faculty, and administrative members.

★For more details of the action taken, please check on our website:
https://www.hiroshima-u.ac.jp/en/torrentialrain_201811report

■ HU' S EMERGENCY SUPPORT TO OUR INTERNATIONAL STUDENTS

1. Supplying halal-certified food with the students

Free supply of food was distributed to about 150 international students at HU.
- 120 cans of emergency food
- 770 "Momiji-Manju" (small, maple-leaf-shaped sweets) etc.

2. Disseminating emergency information in Japanese, English and Chinese on the university's website

Comments from HU international students

- It was great that the university provides the international students with such support at the time of emergency. The quality of the supplied food was good too. I really appreciate the university for giving support like this.
- As a globalized university, I hope HU will continue to provide information in multiple languages.

■ ACTIVITIES BY HU STUDENTS

Volunteer activities were organized by student-run organizations "Operation Tsunagari" and "COCO" acting as a point of contact.

A total of 1,301 HU students participated in the volunteer work. They were dispatched to the disaster-stricken area to help removing mud.

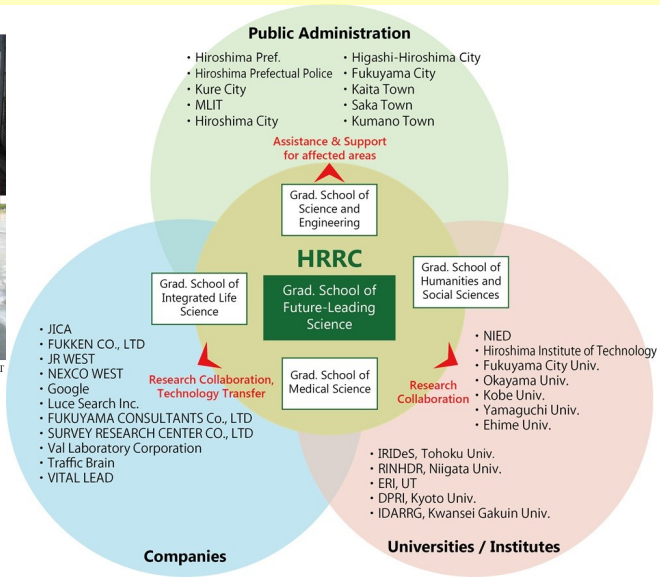
Fifteen HU students, including Daiki Miyasako and Shota Nakamura provided rice balls and drinks with the drivers who were stuck on the major roads in Higashi-Hiroshima city. This news was reported on our local newspaper.

Rice balls provided to the drivers

■ HU RESILIENCE RESEARCH CENTER

Figuring out "synergistic torrential rainfall disaster"

Photos courtesy of MLIT



Following the July Torrential Rain 2018, Hiroshima University Resilience Research Center (HRRC) was established as a new interdisciplinary research organization, which is capable of conducting investigation and analysis on disasters caused by torrential rain because such a specific research topic was rarely done by the conventional research field of disaster prevention and disaster mitigation.

The center therefore aims to establish the world-class research center that focuses on research on synergistic torrential rainfall disaster, and to pursue a cutting-edge interdisciplinary research concerning natural disaster science by networking with leading research institutions from Japan and abroad.

★For further information:
HRRC Website
https://www.hiroshima-u.ac.jp/en/hrrc

HU has Ranked High in University Rankings in Japan

■ UNIVERSITY RANKING BY EMOTION TECH CO.

Hiroshima University has been ranked in:

7th place among 28 universities in Japan
For "Alumni Attachment to their Alma Maters" ranking

(All Japanese University NPS (Net Promoter Score (NPS) Survey)

The survey was focused on "To what extent would you recommend studying at your alma mater to your friends or family? ". The survey asked respondents how much the respondents' experiences with the following seven items affected their "level of recommendations": "The image towards the university", "The location and The facilities", "Tuition and scholarship", "Curriculum and lectures", "Campus life", "Job hunting support", and "After graduation", affected the recommendation. NPS (Net Promoter Score*) was calculated based on the responses from each item.

Hiroshima University was ranked at the 7th place among the universities with a positive NPS score of +15%. The university had significantly high score for "The image towards the university", and "Curriculum and lectures".

*NPS was created by Fredrick F. Reichheld of "Bain & Company".

As the number of NPS becomes bigger and bigger, the consumers' loyalty increases. By checking the NPS of alma mater of graduate alumni, we get to find out the alumni's attachment to their alma mater.

NPS Japanese University Ranking

Rank	Name of University	NPS Score
1	Keio University	+63%
2	The University of Tokyo	+60%
3	Kyoto University	+50%
4	Waseda University	+41%
5	Kwansei Gakuin University Doshisha University	+31%
7	**Hiroshima University**	**+15%**
8	Aoyama Gakuin University Nagoya University	+9%

Source: the data above was extracted from the results of "All Japanese University NPS survey"

"Mathbridges Calendar"

HU joins International Collaboration project by the University of Münster

A Calendar that bridges "Worlds Famous Bridges" and "Mathematics"

University of Münster (Germany) has made a calendar called "Mathbridge Calendar". This calendar is made with the cooperation from universities from 12 countries around the world.

This calendar was made with the theme "Worlds Famous Bridges" and "Mathematics".

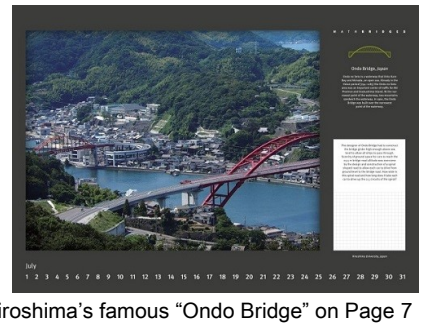
Assistant Professor Kazuya Kageyama and Ippo Ishibashi Doctor 2nd grade, of Graduate School of Education, Hiroshima University is also involved in the project.

This calendar was born from the idea of "Having people interested in mathematics with the problems related to famous bridges around the world."

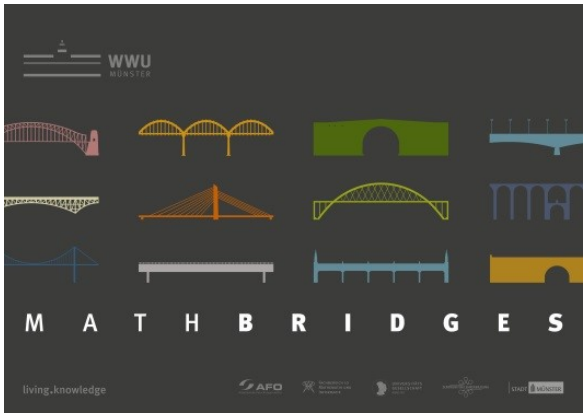
Flip the calendar, and enjoy the worlds beautiful bridges and Mathematics!

Full version of the Calendar is available from the following link:

https://www.hiroshima-u.ac.jp/system/files/112146/AFO-Kalender_Mathebruecken_20180107.pdf



Find Hiroshima's famous "Ondo Bridge" on Page 7



HU Graduate School of Education Joins INEI representing Japan

As the representative university of Japan, Graduate School of Education, Hiroshima University has applied for the membership of the International Network of Educational Institutes (INEI)*, an international network of research universities with the function of teacher education where only one leading university from each country can be affiliated with. The membership application was approved at the General Assembly held in Beijing on November 22nd, 2018. An agreement between Hiroshima University and INEI was concluded in early February 2019.

In the future, we will promote student and academic exchanges among the member institutions, hold annual symposia for graduate students, and draw up plans for joint research projects and joint programs.

URL Links for INEI:

International Network of Educational Institutes(INEI)

http://inei.bnu.edu.cn/

INEI Annual Symposium

* INEI: Established in 2007, it is an international network of institutions specialized in educational research and teacher training. It consists of institutions from ten countries as the network has been maintained on “one member per one country basis (following the membership withdrawal by Denmark in 2018, Japan has become a new member this time).” The member organizations shall fulfill the following requirements: 1) National or public institution, 2) has a high prestige in the installation area and the whole world, 3) Research-centered institution, 4) Establishment of teacher education programs and graduate schools, 5) There is no geographical bias with the current members.

INEI Member Institutes

- Melbourne Graduate School of Education, University of Melbourne, Australia
- University of São Paulo, Brazil
- Ontario Institute of Studies in Education, University of Toronto, Canada
- Faculty of Education, Beijing Normal University, China
- National Institute of Education, Nanyang Technological University, Singapore
- College of Education, Seoul National University, South Korea
- School of Education, University of Cape Town, South Africa
- UCL Institute of Education, University College London, U.K.
- School of Education, University of Wisconsin-Madison, U.S.A.
- Aarhus University, Denmark (Withdrawal 2018)

UPCOMING EVENTS

Graduate School of Biosphere Science

International Conference of Harmful Algae To be held in Hiroshima, Japan 2022

*The Graduate School of Biosphere Science is reorganized into the "Graduate School of Integrated Sciences for Life" from April 2019.

Supporting Sectors: Hiroshima University, Hiroshima Prefecture, Hiroshima City

At "18th International Conference of Harmful Algae (ICHA)" held in Nante, France on October 2018, the committee took the unanimous decision that 20th ICHA will be hosted by Hiroshima in 2022. Professor Koike, Graduate School of Biosphere Science, and Professor Imai (Hokkaido University) had mounted intensive campaign to invite the conference to Hiroshima, under solidary cooperation with Hiroshima University, Hiroshima Prefecture, Hiroshima City as supporting sectors, and with the Hiroshima Convention & Visitors Bureau (HCVB) and the Japan National Tourism Organization (JNTO). This conference is an academic occasion where researchers or stakeholders gather biannually to present their outputs relating to harmful algal blooms (usually abbreviated as HABs) which may cause fish mass mortality by red-tides and shellfish poisonings due to toxic algae. 600-800 participants from worldwide are expected.

The sophisticated cuisine culture in Japan has long been supported by fishery products which are provided in bulk by aquaculture. So the history of aquaculture has been largely subject to the many struggles with HABs, to say the least. The aquaculture industries have suffered extensively from the threats of HABs that result in both fish-kills and shell fish poisonings. Turning our eyes to the population and food problems of the world, it is remarkable that the rapidly growing global population will soon be exceeding 10 billion. Hence, it is crucial to utilize marine resources more effectively than ever. However, HABs present major challenges in the coastal regions of the world, due to forces such as global climatic change, eutrophication, and the spread of invasive species with ballast water, etc. Exploring coping mechanisms to these challenges will be of immense global importance in the near future, in order to continue enjoying the bountifulness of the sea. Therefore, we believe that Japan would be one of the best places for the productive discussion of these important marine issues.

The Japanese people have a long history of intimate ties with the coastal environment which is defined by the concept of Sato-umi whereby biological productivity and biodiversity have been enhanced through the interactions of humans with the coastal ecosystem. Japanese coastal landscapes have been formed and maintained through various human activities such as fisheries including aquaculture and shipping. Fortuitously, the Japanese people have managed to develop unique solutions to coastal problems such as HABs. The concept of Sato-umi represents a human-in-nature approach, in which a healthy coastal ecosystem supports sound fisheries including aquaculture, and harmonious human activities of maintenance and improvements are maintained for sustainable ecosystems. For example, the cultivation of seaweeds and bivalves can be recognized as a kind of purification for coastal environments.

The 20th ICHA in Hiroshima would provide an excellent opportunity to make contributions to the HAB knowledge from all over the world. The theme of the conference will be “HAB Science and Human Well-being”. The goal is to exchange relevant scientific information towards a greater understanding of HAB mechanisms, better and timely predictions of HAB occurrences and mitigating their negative effects. The 20th ICHA will provide an opportunity to communicate, compare and exchange research contents, contribute cutting-edge knowledge, make and renew friendships, and contribute effectively towards greater international efforts for understanding and protecting the marine and fresh water ecosystems.

CAMPUS PHOTOS (SPRING)

In the spring, from late March to early April, you can see cherry blossoms (*sakura*) throughout the campus. March happens to be the season when many HU students are graduating. The photos below show new graduates in suits and *hakama* (traditional Japanese garment worn over kimono) having a memorable time before and after the Graduation Ceremony.

SAKURA in full bloom (Higashi Hiroshima Campus) *pictures taken in April 2018

Tossing new graduates into the air!
A familiar sight at Graduate Ceremony in HU.

New graduate girls in colorful *HAKAMA*s
*pictures taken in March 23rd, 2019

★Find more photos from our official Instagram! https://www.instagram.com/hiroshima_univ/

RESEARCH FOCUS

Graduate School of Engineering

Soft Exoskeleton Technology Helps People Living in Hyper-aged Society

Prof. Yuichi Kurita

Arthur C. Clarke, who is a famous British science fiction writer, said in his literature: 'The old idea that Man invented tools is therefore a misleading half-truth; it would be more accurate to say that *tools invented Man'* [1]. Many people already use technology that augments their abilities in day-to-day life. Smartphones, for example, are like an external memory. Can we improve our physical abilities with wearable assistive technology? This is our motivation of the research. Our research groups have developed soft exoskeleton suits in collaboration with Daiya Industry Co., Ltd. Thanks to good characteristics of the newly developed pneumatic artificial gel actuators (Fig.1), light-weighted, flexible, and cost-effective soft exoskeleton suits could be designed. We have developed the soft exoskeleton suits for walking assist[2] and construction work assist[3]. We are also exploring the soft exoskeleton technology to augment the sports experience, such as tennis swing augmentation[4] and motion timing training[5]. In addition, our students' team won the third place on Superhuman Sports Design Challenge[6] with 'MuscleBlazer', which uses the developed soft exoskeleton. Practice and training is not always fun, but it does not always have to be that way. If people use soft exoskeleton technology, they will enjoy sports more. I hope physical assistive technology can change the world for anyone who actively enjoy their life independently of ageing.

This research is supported by JST PRESTO(JPMJPR16D3) and KAKENHI(18H03276).

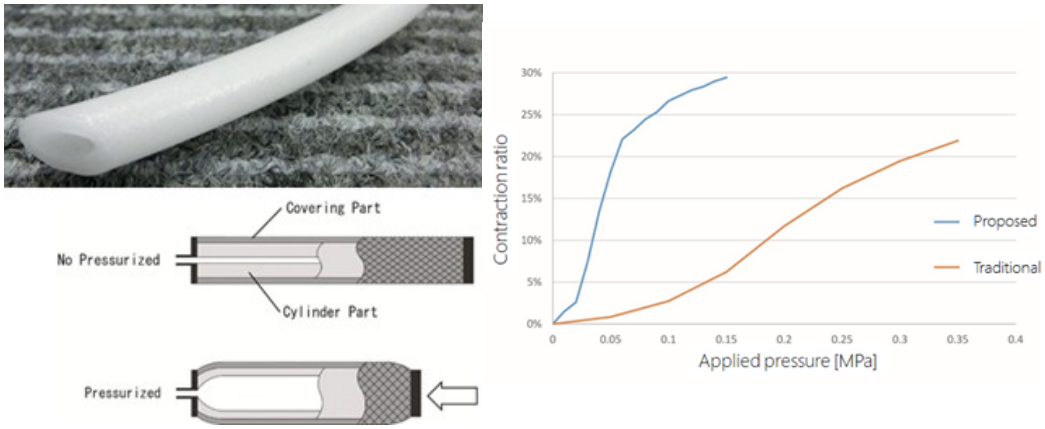


Figure 1: Pneumatic artificial gel muscles [1]

Figure 2: Developed soft exoskeleton suits

Figure 3: MuscleBlazer presented on Superhuman Sports Design Challenge 2018

References

[1] A. C. Clarke, Profiles of the Future: An Inquiry into the Limits of the Possible, Henry Holt & Co, 1984

[2] K. Ogawa, C. Thakur, T. Ikeda, T. Tsuji, Y. Kurita, Development of a pneumatic artificial muscle driven by low pressure and its application to the unplugged powered suit, Advanced Robotics, 31(21):1135-1143, 2017

[3] K. Ogawa, A. Ono, Y. Fukuda, K. Tsuneyasu, Y. Kurita, Development of a lightweight flexible construction work assist suit using pneumatic rubber artificial muscles, 40th International Conference of the IEEE Engineering in Medicine and Biology Society, 2018

[4] K. Ogawa, T. Ikeda, Y. Kurita, Unplugged powered suit for superhuman tennis, 12th France-Japan Congress, 10th Europe-Asia Congress on Mechatronics, pp.355-358, 2018

[5] W. Sakoda, T. Tsuji, Y. Kurita, VR training system of step timing for baseball batter using force stimulus, AsiaHaptics2018, 2018

[6] Y. Kishishita, A. R. Vega, S. Das, C. Thakur, Y. Yanase, Y. Kurita, Muscleblazer: a wearable laser tag module powered by PAM-induced force-feedback, First International Symposium on Amplifying Capabilities, Competing in Mixed Realities, 2018

Graduate School of Biomedical & Health Sciences

Genetic Mechanism of Atrial Fibrillation Pathogenesis

Prof. Yasuki Kihara

Atrial fibrillation (AF) is the most common and serious arrhythmia causing cerebral embolism and heart failure. Numerous factors, such as hypertension, aging, diabetes, and structural heart diseases, increase AF developments. Genetic backgrounds also contributes to AF pathogenesis. Several genes have been reported to be associated with AF by genome wide association studies (GWAS), among them, the single nucleotide polymorphism (SNP) rs6817105 (T > C) near Paired-like homeodomain transcription factor (*PITX2*) with AF had the strongest association.

Dr Yasuki Kihara (a professor of Graduate School of Biomedical & Health Sciences at Hiroshima University)'s team, including Dr. Syunsuke Tomomori, (a student of Graduate School of Biomedical & Health Sciences at Hiroshima University), and Dr. Yukiko Nakano (an associate professor of Graduate School of Biomedical & Health Sciences at Hiroshima University) clarified the AF onset mechanism brought by the *PITX2* gene.

We genotyped the *PITX2* SNP rs6817105 in 574 AF patients and 1,554 non-AF controls from Hiroshima University. The *PITX2* SNP minor allele frequency was significantly higher in AF patients than non-AF controls. In AF patients, sinus node recovery time was longer and left atrial volume index was larger in the *PITX2* SNP carriers than those in non-carriers. These results suggested that the people with *PITX2* gene SNP carriers raised sinus node dysfunction and left atrial structural remodeling and were susceptible to AF pathogenesis.

Related Articles

Shunsuke Tomomori, Yukiko Nakano, Hidenori Ochi, Akinori Sairaku, Yuko Onohara , Takehito Tokuyama, Chikaaki Motoda, Hiroya Matsumura, Michitaka Amioka, Naoya Hironobe, MD, Yousaku Ohkubo, Shou Okamura, Hiroshi Kawazoe, Yukie Nishiyama, Hidenoshi Tahara, Kazuaki Chayama, and Yasuki Kihara

Chromosome 4q25 Variant rs6817105 Bring Sinus Node Dysfunction and Left Atrial Enlargement, Scientific Reports 2018 8(1):14565

DOI: 10.1038/s41598-018-32453-8

Original Website

Department of cardiovascular medicine, Graduate School of Biomedical & Health Sciences

https://home.hiroshima-u.ac.jp/cardio-e/

Identification of a Critical Regulator of DNA Damage Response in Hypoxic Cancer Cells

Assistant Prof. Keiji Tanimoto

The development of novel strategies to sensitize cancer cells to irradiations

An international team of researchers led by Dr. Keiji Tanimoto at Research Institute for Radiation Biology and Medicine Hiroshima University found how cancer cells respond to DNA damages when in low oxygen (hypoxic) conditions. Through comprehensive gene expression analyses, the team determined how one family of Differentiated Embryo Chondrocyte (DEC) transcription factors controls DNA damage response, as well as how they attenuate the effects of anticancer therapies.

Our bodies have strict molecular mechanisms that help us respond to environments of hypoxia. They also arise in several diseases such as cancers, resulting in poor prognoses. Understanding how cancer cells behave in hypoxia may provide new strategies for tackling cancer. This study leads to the development of drugs that can modify hypoxic signal, and make tumors more sensitive to anticancer therapy. In our results, DEC2 is the most effective target of this drug.

This Story is published on

PLoS One. 2018 Feb 21;13 (2):e0192136. doi: 10.1371/journal.pone.0192136. eCollection 2018.

https://www.ncbi.nlm.nih.gov/pubmed/?term=Tanimoto+bono

Hideaki Nakamura, Hidemasa Bono, Keiko Hiyama, Takeshi Kawamoto, Yukio Kato, Takeshi Nakanishi, Masahiko Nishiyama, Eiso Hiyama, Nobuyuki Hirohashi, Eisaburo Sueoka, Lorenz Poellinger, Keiji Tanimoto. Differentiated Embryo Chondrocyte plays a crucial role in DNA damage response *via* transcriptional regulation under hypoxic conditions. PLOS ONE 2018, 13(2): e0192136.

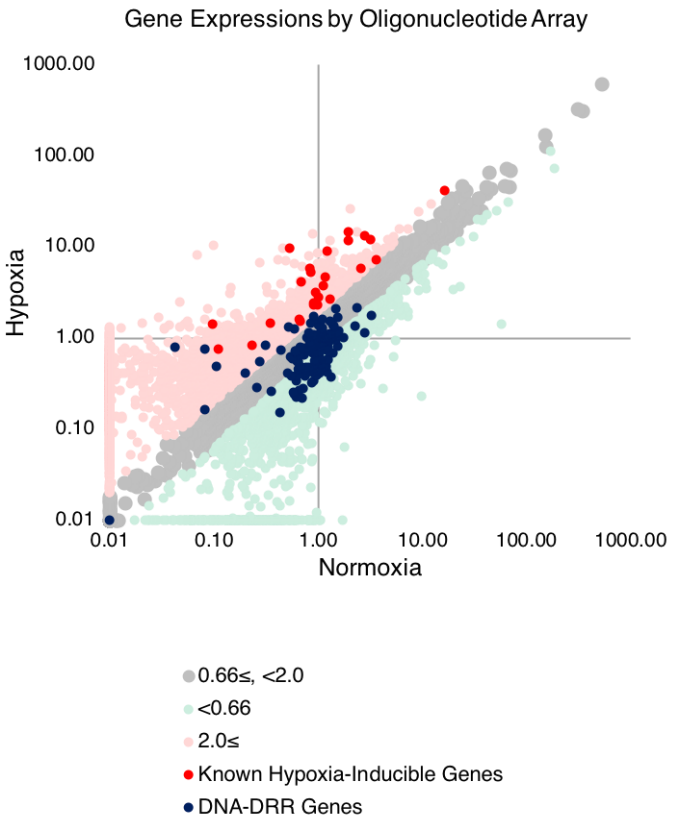


Figure 1

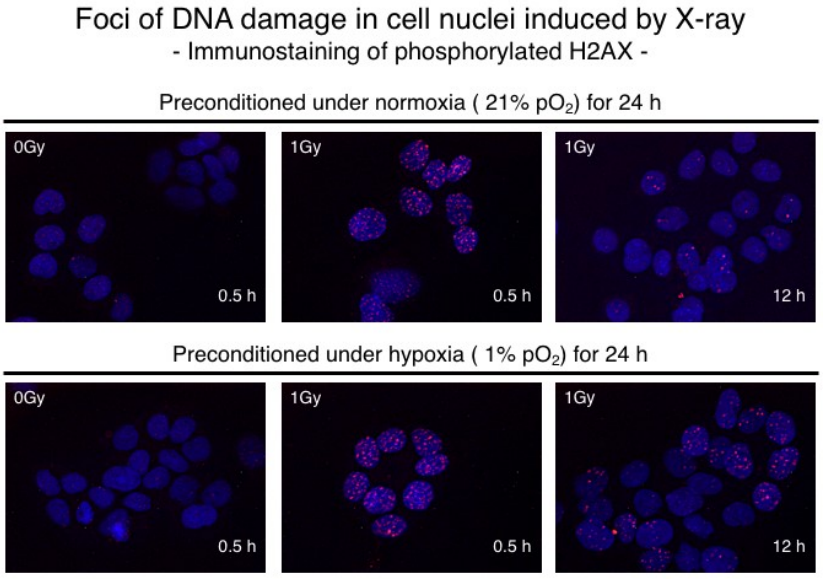


Figure 2

Schools and Graduate Schools

Schools

For undergraduate level, Hiroshima University consists of 12 schools which provide undergraduate courses including majors in the natural sciences, humanities, the social sciences, and many others.

School of Integrated Arts and Sciences

School of Letters

School of Education

School of Law

School of Economics

School of Science

School of Medicine

School of Dentistry

School of Pharmaceutical Sciences

School of Engineering

School of Applied Biological Science

School of Informatics and Data Science

Advanced Course

Special Education Major Program

Graduate Schools

Graduate level studies at Hiroshima University consist of 11 graduate schools including Education, Biomedical & Health Sciences, Engineering, and many other majors. In addition, two unique program offerings: “The Phoenix Leader Education Program for Renaissance from Radiation Disaster” and “The Taoyaka Program for Creating a Flexible, Enduring, and Peaceful Society”, combine graduate level academic coursework with integrative research components.

Graduate School of Integrated Arts and Sciences

Graduate School of Letters

Graduate School of Education

Graduate School of Social Sciences

Graduate School of Science

Graduate School of Advanced Sciences of Matter

Graduate School of Biomedical & Health Sciences

Graduate School of Engineering

Graduate School of Biosphere Science

Graduate School for International Development and Cooperation

Hiroshima University Law School

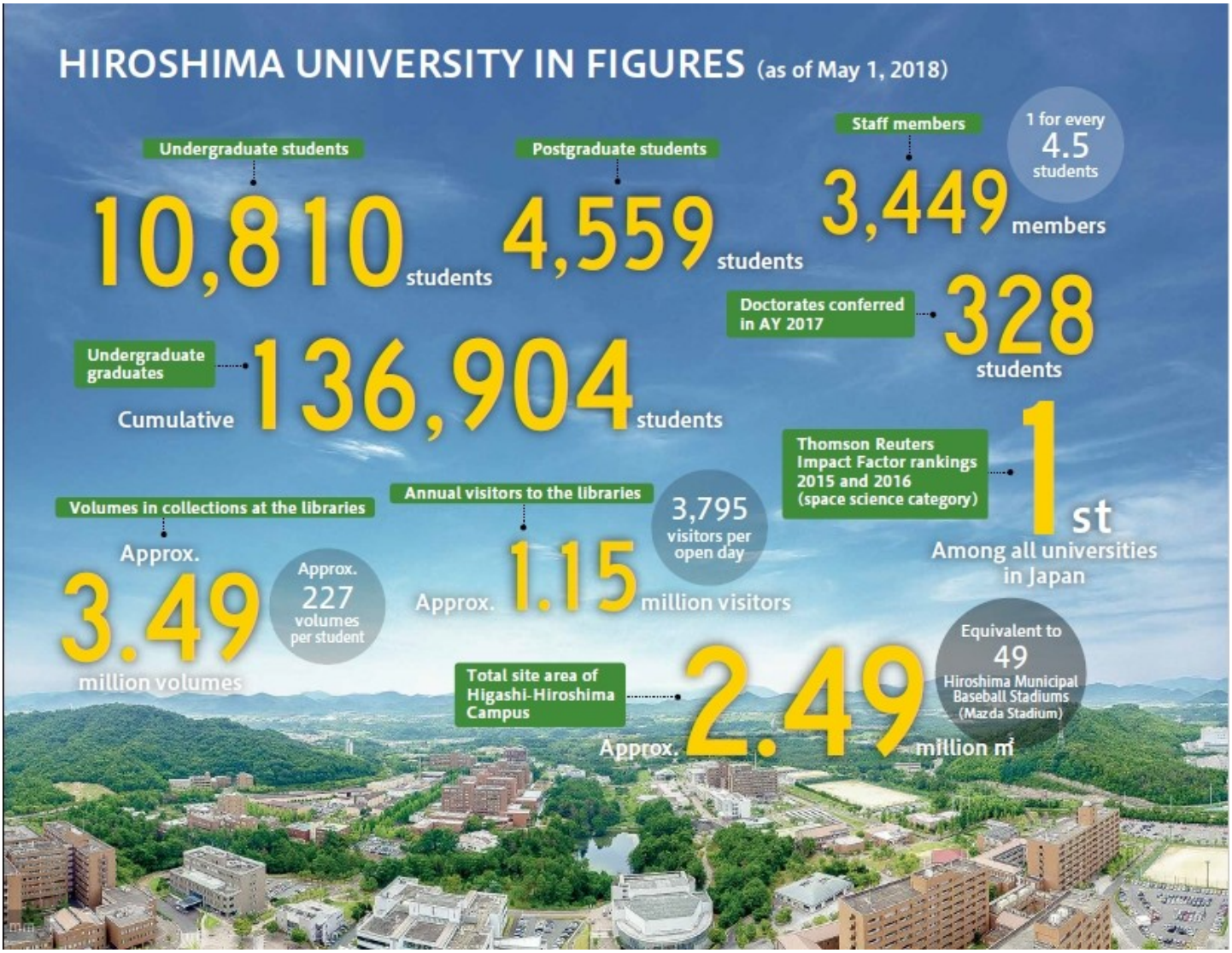
Graduate School of Integrated Sciences for Life (to be opened in April 2019)

Graduate School of Biomedical and Health Sciences (to be opened in April 2019)

Interdisciplinary Graduate Educational

Phoenix Leader Education Program (Hiroshima Initiative) for Renaissance from Radiation Disaster (adopted by MEXT), TAOYAKA PROGRAM for creating a flexible, enduring, peaceful society (adopted by MEXT) and Education Program for Global Environmental Leaders.

President Mitsuo Ochi and HU students



Networks and Overseas Bases

Overseas Bases

HU has established overseas bases in 15 countries/regions (As of September, 2018)
Number of Overseas Bases 18 (As of September, 2018)

International Exchange Agreements

(As of December 30, 2018)
University-level: 327 Agreements with 299 Organizations in 51 Countries/Regions
School / Institute-level: 377 Agreements with 341 Organizations in 52 Countries/Regions

International Students

(As of May 1, 2018)
A total of 1,660 students from 73 countries and regions are studying at HU

Campus Location

Hiroshima University comprises three campuses: vast and green Higashi-Hiroshima Campus, and Kasumi Campus and Higashi-Senda Campus, both located in Hiroshima City, a locale whose name resonates with humanity's quest for international peace and cultural prosperity.

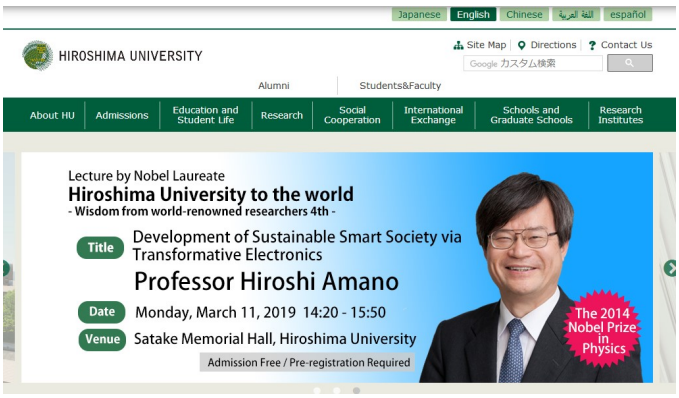
Find more about HU

Please visit our website for more details!

■HU Official Website

(English) https://www.hiroshima-u.ac.jp/en

Latest News, Events and Research as well as links to each university section are available from this webpage.



■Updates from our Laboratory

https://huscf.hiroshima-u.ac.jp/

This webpage is the source for visitors worldwide to stay updated about what happens in the lab at HU.

Meet Ms. Emma Buchet,

Our new Sci-Com Fellow! (Feb 2019-)

The Research Planning Office(研究企画室) at Hiroshima University has hired professional science writers through the Science Communication Fellowship. Fellows represent the interface between the campus research community and the nonacademic world. They publish science news in English on the Research Updates website and Social Media. Other works include Q&A interviews with researchers, photo essays, and short videos.

Contact information:

pr-research@office.hiroshima-u.ac.jp

HU Promotional Video

Visit the following webpage to watch this video.

(YouTube)

https://youtu.be/OzZ4YBex8Ps

Hiroshima University Promotional Video is available on our YouTube channel!

This video features the university's leading research including "Genome Editing," "Research on High-Energy Astrophysics," "Regional Promotion," "Brain Science and KANSEI," and "Live-Donor Liver Transplant" as well as everyday campus scenes. Please also enjoy the beautiful drone footage of our campuses!

HU SNS Accounts

HU Facebook

https://www.facebook.com/HiroshimaUniv.en

HU You Tube

https://www.youtube.com/user/HiroshimaUniv

HU Research Facebook

https://www.facebook.com/HiroshimaUniversityResearch

HU Instagram

https://www.instagram.com/hiroshima_univ/

HU Research Twitter

https://twitter.com/HU_Research

UNIVERSITY OF WORLD-WIDE REPUTE AND SPLENDOR
FOR YEARS INTO THE FUTURE

HIROSHIMA UNIVERSITY