

HeKKSaGOn

Heidelberg | Kyoto | Karlsruhe | Sendai | Göttingen | Osaka

NETWORK OF UNIVERSITIES

The 7th German-Japanese University Presidents' Conference

12th–13th September 2019
Heidelberg University

Post-Conference Brochure



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386



京都大学
KYOTO UNIVERSITY



Karlsruhe Institute of Technology



大阪大学
OSAKA UNIVERSITY



GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

Sponsored by:



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PROGRAMME

THURSDAY, 12 SEPTEMBER 2019

08:30	Pick-up at hotels	
09:00–09:45	<p>WELCOME AND OPENING</p> <p>Welcome by Rector Bernhard Eitel, Heidelberg University</p> <p>Opening address by Consul General Tetsuya Kimura</p>	Great Hall, Old University
10:00–13:00	<p>CAMPUS TOURS</p> <p>Campus Tour I Campus Im Neuenheimer Feld – Marsilius Kolleg – Centre for Advanced Materials – Mathematikon</p> <p>Campus Tour II Campus Bergheim and Old Town – Centre for Asian and Transcultural Studies – Faculty of Economics and Social Sciences – University Library</p>	<p>Pick-up at Old University entrance</p> <p>Pick-up at University Square</p>
13:00–14:30	Lunch and Registration	New University
14:30–17:00	<p>CLOSED PRESIDENTS' MEETING</p> <p>Presentations on new developments at HeKKSaGOn universities and opportunities for cooperation</p> <p>Presidents, Administrators and Honoured Guests</p> <p>Opening addresses by Katja Becker (DFG) and Masahiko Hayashi (JSPS)</p>	Senate's Hall, Old University
<i>parallel</i>	<p>WORKING GROUP MEETINGS</p> <p>(1) Life and Natural Science Fusion</p> <p>(2) Coordination Chemistry for Energy Conversion, Catalysis and Nanotechnology</p> <p>(3) Social Sciences and Humanities</p> <p>(4) Dynamic Imaging for Physical, Chemical and Biological Interests</p> <p>(5) Robotics: Challenges and Opportunities in the 21st Century</p> <p>(6) Mathematics in Life Sciences, Materials Science and Economy</p>	<p>New University</p> <p>Former Senate's Hall</p> <p>Lecture Hall UGX60</p> <p>Lecture Hall 12</p> <p>Lecture Hall UGX61</p> <p>Lecture Hall 04a</p> <p>Lecture Hall 03</p>

	(7) Data Science (8) Renewable Energy and Energy Systems	Disposal Room "Orgel" Lecture Hall 12a
<i>parallel</i>	STUDENTS' WORKSHOP "HeKKSaGOn for Future: How can the German-Japanese university network contribute to sustainable development?"	Department of Romance Studies Ernst-Robert-Curtius-Saal
17:00–18:15	Break <i>Optional: Transfer to hotels</i>	
18:15	Pick-up at hotels <i>For guests who are not using the bus transfer from one of the hotels, a short walk will be accompanied by one of Heidelberg University's staff members starting in front of New University.</i>	
18:30–21:30	RIVER BOAT TOUR AND DINNER Aboard the "MS Alt Heidelberg" Toasts of Presidents and Vice-Presidents: Rector Bernhard Eitel, Heidelberg University President Shojiro Nishio, Osaka University Vice-President Thomas Hirth, Karlsruhe Institute of Technology	Landing Place: Stadhalle Heidelberg Neckarstaden 25
21:30	Transfer to hotels	

PROGRAMME

FRIDAY, 13 SEPTEMBER 2019

08:30	Pick-up at hotels	
09:00–11:00	CLOSED PRESIDENTS' MEETING	Senate's Hall, Old University
<i>parallel</i>	WORKING GROUP MEETINGS (1) Life and Natural Science Fusion (2) Coordination Chemistry for Energy Conversion, Catalysis and Nanotechnology (3) Social Sciences and Humanities (4) Dynamic Imaging for Physical, Chemical and Biological Interests (5) Robotics: Challenges and Opportunities in the 21st Century (6) Mathematics in Life Sciences, Materials Science and Economy (7) Data Science (8) Renewable Energy and Energy Systems	New University Former Senate's Hall Lecture Hall UGX60 Lecture Hall 12 Lecture Hall UGX61 Lecture Hall 04a Lecture Hall 03 Disposal Room "Orgel" Lecture Hall 12a
<i>parallel</i>	STUDENTS' WORKSHOP "HeKKSaGOn for Future: How can the German-Japanese university network contribute to sustainable development?"	
11:00–12:30	CLOSED PRESIDENTS' MEETING Trip to Philosophers' Walk Transfer to Philosophers' Walk, photo, walk back to Old Town	Pick-up at Old University
<i>parallel</i>	WORKING GROUP MEETINGS	New University
<i>parallel</i>	STUDENTS' WORKSHOP	Department of Romance Studies Robert-Curtius-Saal
12:30–13:45	Lunch	New University
13:45–14:00	Group Photo	New University entrance
14:00–15:40	PLENARY MEETING Presentation of Students Presentations of Working Groups	Great Hall, Old University
15:40–16:00	Coffee break	Bel Etage, Old University

16:00–17:30	PLENARY MEETING Presentations of Working Groups Report from the Presidents' Meeting Signing of the Joint Statement Presentation of Gifts	Great Hall, Old University
17:30–18:45	Break <i>Optional: Transfer to hotels</i>	
18:45	Pick-up at hotels <i>Transfer to castle only from hotels by bus or individually (15 mins. walk, funicular or taxi)</i>	
19:00–22:00	RECEPTION AND FAREWELL DINNER AT HEIDELBERG CASTLE Toasts of Presidents and Vice-Presidents: President Juichi Yamagiwa, Kyoto University Vice-President Hiltraud Casper-Hehne, Göttingen University Executive Vice-President Toshiya Ueki, Tohoku University	Königssaal, Heidelberg Castle
22:30	Transfer to hotels	

**PROF. DR. RER. NAT. HABIL.
DR. H.C. BERNHARD EITEL**
HEIDELBERG UNIVERSITY – RECTOR



Personal Information

Born in 1959 in Karlsruhe.

Education

- 1994 Habilitation, Department of Geography, University of Stuttgart
Habilitation Title: "Kalkreiche Decksedimente und Kalkkrustengenerationen in Namibia: Zur Frage der Herkunft und Mobilisierung des Calciumcarbonats." ("Calcium-Rich Cover Beds and Calcrete Generations in Namibia: On the Origin and Mobilization of the Calcium Carbonate")
- 1989 Doctorate, Department of Geography, University of Stuttgart (with Honours)
Dissertation Title: "Morphogenese im südlichen Kraichgau unter besonderer Berücksichtigung tertiärer und pleistozäner Decksedimente. Ein Beitrag zur Landschaftsgeschichte Südwestdeutschlands." ("Morphogenesis in the Southern Kraichgau with Respect to the Tertiary and Pleistocene Cover Beds: A Contribution to Landscape History in Southwest Germany")
- 1980–1986 Staatsexamen, Geography and German Studies, University of Karlsruhe (TH)

Academic Career

- Since 2001 Full Professorship (C4) of Physical Geography, Director of the Institute of Geography of Heidelberg University
- 2001 Offered full professorship (C4) of Physical Geography, University of Bayreuth (declined)
- 2000 Offered full professorship (C4) of Physical Geography, Göttingen University (declined)
- 1995 Professor (C3) for Physical Geography, University of Passau
- 1989–1995 Akademischer Rat (Associate Professor), Department of Geography, University of Stuttgart
- 1989 Scientist at the Department of Geography, University of Stuttgart

Functions in Academic Self-Administration

- Since 2007 Rector of Heidelberg University
- 2006–2007 Vice-Dean for Earth Sciences, Faculty of Chemistry and Earth Sciences
- 2005–2006 Spokesman of the University Senate
- 2004–2006 Dean of the Combined Faculties of Natural and Mathematical Sciences and Dean of the Faculty of Chemistry and Earth Sciences
- 2002–2004 Vice-Dean for Earth Sciences, Faculty of Chemistry and Earth Sciences
- Since 2001 Director, Institute of Geography

Memberships (Selection)

- Since 2018 Chairman of the Baden-Württemberg State Rectors' Conference
- Since 2017 Vice-Chairman Council Science Media Center Germany (SMC)
- 2016–2018 Vice-Chairman of the Baden-Württemberg State Rectors' Conference
- 2012–2014 Spokesman of German U15, a strategic interest group for outstanding research universities with top medical faculties
- 2006–2007 Member of the Scientific Advisory Board for the Research Group (AK) on Geomorphology (Deutscher AK für Geomorphologie in der DGfG e.V.)

Memberships (Selection)

- | | |
|-----------|--|
| 2005 | Commission Member of the State of Niedersachsen Commission for the Evaluation of Research in the Departments of Geography in the State's Universities |
| 2004–2009 | Member of the UNESCO-IGCP 500 Management Group “Westerlies and Monsoons: Impacts of Climate Change and Variability on Dryland Environments, Hydrology and People” |
| 2004–2007 | Committee Member of the Heidelberg Geographic Society (Heidelberger Geographische Gesellschaft [HGG]) |
| 2002 | Steering Committee Member of the GeoUnion (Alfred-Wegener-Stiftung) |
| 2002–2007 | Member of the Executive Commission of the International Association of Geomorphologists (IAG) Working Group on “Interaction between Fluvial, Aeolian and Lacustrine Processes in Arid Regions” |
| 2002–2006 | Chairman of the Research Group on Geomorphology in the German Society for Geography |
| 2002–2004 | Chairman of the Heidelberg Geographic Society |
| 1994–2002 | Member of the Supervisory Board for the Research Group on Geomorphology in the German Society for Geography |

Awards and Distinctions

- | | |
|------|--|
| 2019 | Awarded with the “Pro Universitate” medal of Semmelweis University Budapest for the promotion of scientific exchange and partnership between the universities of Budapest and Heidelberg |
| 2016 | Honoured by the Geological Society of America with the “Farouk El-Baz Award for Desert Research” for pioneering achievements in researching the environmental history of deserts |
| 2015 | Awarded honorary doctorate by the Comenius University in Bratislava |
| 2011 | “Ordre des Palmes Académiques” (highest grade) by the French Republic for significant contributions to the French higher education system |
| 2010 | Member of the German Academy of Sciences Leopoldina, National Academy of Sciences |
| 2009 | Elected as corresponding member of the German Archaeological Institute (DAI) |
| 2008 | Member of the German Academy of Science and Engineering (acatech) |

Areas of Research

Geomorphology, Soil Geography, Geoecology, Geoarchaeology, Arid Environments and Dryland Research, in particular in Europe, the Arctic, Southern Africa, South America, China (Xinjiang).

Selected Publications

- Eitel, B. (2000): Different amounts of pedogenic palygorskite in South West African Cenozoic calcretes: Geomorphological, palaeoclimatical and methodological implications. – *Z. Geomorph. N. F. Suppl.-Bd.* 121, S. 139–149.
- Eitel, B., Eberle, J. & Kuhn, R. (2002): Holocene environmental change in the Otjiwarongo thornbush savanna (Northern Namibia): Evidence from soils and sediments. – *Catena* 47: 43–62.
- Eitel, B., van der Borg, K., Eberle, J. & Megies, H. (2002): Late Pleistocene / Early Holocene glacial history of northern Andréeland (Northern Spitsbergen / Svalbard Archipelago): evidence from glacial and fluvio-glacial deposits. – *Z. Geomorph. N. F.* 46: 337–364.
- Eitel, B., Hecht, S., Mächtle, B., Schuhkraft, G., Kadereit, A., Wagner, G. A., Kromer, B., Unkel, I. & Reindel, M. (2005): Geoarchaeological evidence from desert loess in the Nazca-Palpa region, southern Peru: Palaeoenvironmental changes and their impact on Pre-Columbian cultures. – *Archaeometry* 47: 137–185.
- Eitel, B., Kadereit, A., Blümel, W. D., Hüser, K. Lomax, J. & Hilgers, A. (2006): Fluvial deposits in the Upper Hoanib river catchment, northwestern Namibia: New evidence of environmental changes before and after the Last Glacial Maximum at the eastern Namib Desert Margin. – *Palaeogeography, Palaeoclimatology, Palaeoecology* 234: 201–222.
- Eitel, B. & Mächtle, B. (2009): Man and environment in the eastern Atacama Desert (Southern Peru): Holocene climate changes and their impact on Pre-Columbian cultures. In: Reindel, M. & Wagner, G.A. (ed.): *New Technologies for Archaeology*, Springer Verlag, Berlin, Heidelberg, pp. 17–37.

**PROF. DR.
JUICHI YAMAGIWA**
KYOTO UNIVERSITY – PRESIDENT



Research Interests

Primateology, Anthropology

Professional Experience

Since 2014 President, Kyoto University
2012–2013 Member, Administrative Council, Kyoto University
2011–2013 Dean, Graduate School of Science and Faculty of Science,
Kyoto University
2009–2011 Member, Education and Research Council, Kyoto University
2002–2014 Professor, Graduate School of Science, Kyoto University
1998–2002 Associate Professor, Graduate School of Science, Kyoto University
1988–1997 Assistant Professor, Primate Research Institute, Kyoto University
1983–1988 Research Fellow, Japan Monkey Center
1980–1983 Research Associate, Japan Institute for African Studies at Nairobi

Education

1975 Bachelor of Science, Kyoto University, Japan
1977 Master of Science, Kyoto University, Japan
1987 Doctor of Science, Kyoto University, Japan

Awards, Decorations, and Memberships

2006 Daido Life Foundation Encouragement Award for Area Studies
2008–2012 President, International Primatological Society
2005–2009 President, Primate Society of Japan
1994–1998 Director, Conservation, Primate Society of Japan
1999–2004 Director of Foreign Affairs, Primate Society of Japan
1995–2008 Director, Japanese Society for African Studies
Since 1992 Member of Primate Specialist Group, IUCN/SSC
2017–2019 President, Japan Association of National Universities
Since 2017 President, Science Council of Japan

Publications

- Over 110 scientific papers in English in international journals
- Over 150 scientific papers in Japanese
- Authored and contributed to several books on primatology, anthropology, and related fields

**PROF. DR.-ING.
HOLGER HANSELKA**
KARLSRUHE INSTITUTE OF
TECHNOLOGY (KIT) – PRESIDENT



About the Person

Born in 1961 in Oldenburg, Germany

Professional Career

- Since 2013 President of Karlsruhe Institute of Technology (KIT)
- Since 2013 Vice-President of the Helmholtz Association of National Research Centers, responsible for the research field Energy
- 2010–2013 Vice-President of TU Darmstadt
- 2006–2012 Member of the Presidential Council of Fraunhofer Gesellschaft and Chairman of the Fraunhofer “Materials and Components” Group
- 2001–2013 Director of the Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt
Professor at the Technical University of Darmstadt, Head of the Chair “System Reliability and Machine Acoustics (SzM)”
- 1997–2001 Professor at the Otto von Guericke University of Magdeburg Holder of the Chair for “Adaptronics”/ Head of the Group “Experimental Mechanics”
- 1995–1997 Head of the “Adaptronics” Unit at the German Aerospace Center (DLR), Braunschweig
- 1993–1995 Head of the working group “Natural Fiber-reinforced Plastics in Automotive and Vehicle Construction” at the German Aerospace Center (DLR), Braunschweig
- 1988–1992 Scientist at the German Aerospace Center (DLR) in Braunschweig, specialized in the field of lightweight construction / fiber composites

Academic Education

- 1992 Doctorate at Clausthal Technical University
- 1981–1988 Studies of Mechanical Engineering at Clausthal Technical University

Work in Boards, Committees and Bodies

- active Member of the Steering Committee of Scientific Platform Climate Protection (WP) of the Federal Ministry of Education and Research (BMBF) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)
Member of the Hightech-Forum of the Federal Ministry of Education and Research (BMBF)
Member of the Steering Committee of Germany’s Platform for Artificial Intelligence (Plattform Lernende Systeme) the Federal Ministry of Education and Research (BMBF)
Vice-President of the German Federation of Industrial Research Associations (AiF e.V.)
Member of the Board of Directors of Conference of European Schools for Advanced Engineering Education and Research (CESAER)
Member of the University Council of TU Clausthal
Chairman of the Technology Council of Dürr AG, Stuttgart
Member of the National Academy of Science and Engineering (acatech)
Member of the Trade Fair Advisory Committee Hannover and the Exhibitors’ Advisory Committee Hannover

Work in Boards, Committees and Bodies

Member of the Board of Trustees "Forum für Zukunftsenergien"
(Forum for Future Energies)

Member of the CTO Circle of the Helmholtz Association of German
Research Centers

Member of the Board of Trustees of the Max Planck Institute for
Intelligent Systems

Member of the Board of Trustees of the Steinbeis Foundation

Member of the Board of Trustees of WPK – the German Science
Journalists' Association

As well as boards and advisory councils of several institutions and
organizations connected to KIT

2006–2009, Member of the Supervisory Board of Dürr AG, Stuttgart
2014–2017

2013–2016 Member of the Advisory Council of MAFA- Beteiligungsverwaltungs-
gesellschaft mbH, Aalen

2008–2016 Member of the Supervisory Board of Harmonic Drive AG,
Limburg a.d. Lahn

2006–2014 Member of the Schaeffler FAG Foundation

PROF. TOSHIYA UEKI

TOHOKU UNIVERSITY – EXECUTIVE VICE-PRESIDENT
FOR GENERAL AFFAIRS, FINANCIAL AFFAIRS AND
INTERNATIONAL RELATIONS



Education

1983 B.A. in Faculty of Law, University of Tokyo

Teaching and Research Career

1983–1986 Research Associate, Faculty of Law, University of Tokyo
 1986–1999 Associate Professor of International Law, Faculty of Law,
Tohoku University
 1988–1990 Visiting Fellow, Research Centre for International Law,
University of Cambridge, U.K.
 1996–1997 Visiting Scholar, Harvard-Yenching Institute, Harvard University, U.S.A.
 1999–2000 Professor of International Law, Faculty of Law, Tohoku University
 Since 2001 Professor of International Law, Graduate School of Law,
Tohoku University

Positions Held

2001–2003 Member of the Education and Research Council, Tohoku University
 2004–2006 Dean, Faculty and Graduate School of Law, Tohoku University
 Member of the President Election Committee, Tohoku University
 2006–2008 Executive Vice-President for Education and Professional Graduate
Schools, Tohoku University
 2008–2009 Executive Vice-President for International Affairs and Legal Affairs,
Tohoku University
 2009–2012 Executive Vice-President for Financial Affairs, Tohoku University
 2012–2018 Executive Vice-President for General Affairs, International Relations,
Tohoku University
 Director, Office of President, Tohoku University
 Director, Tohoku University Library
 Since 2012 Director, Tohoku University China Office
 Since 2014 Director, Office of Japan-Russia Relations, Tohoku University
 Director, Tohoku University Russia Office
 Since 2016 Director, Tohoku University Thailand Office
 Since 2018 Executive Vice-President for General Affairs, Financial Affairs and
International Relations, Tohoku University

Awards, Decorations, and Memberships

- The 27th Adachi Mineichiro Memorial Award (1994)
- Japanese Society of International Law
- International Law Association
- Japanese Association of World Law

Toshiya Ueki is the Executive Vice President for General Affairs, Financial Affairs and International Relations at Tohoku University and is also a Professor at the Faculty and Graduate School of Law. Prof. Ueki served as the Dean of the Faculty and Graduate School of Law (2004-2006) and since 2006 he has served as Executive Vice President of Tohoku University. Presently, he holds the position of Director of Tohoku University China Office as well as that of the Russia Office.

Awards, Decorations, and Memberships

He has authored or co-authored articles on international law and written many books on the subject. He has been recognized for his exceptional work in the fields of transnational/international law and for his studies on the theory of international law as it relates to international organizations. For his outstanding academic achievements, he was awarded the 27th Adachi Mineichiro Memorial Award in 1994. From 1988 to 1990 he was a Visiting Fellow at the Research Centre for International Law at the University of Cambridge, and from 1996 to 1997 he was a Visiting Scholar at the Harvard-Yenching Institute at Harvard University. Prof. Ueki is a member of a number of distinguished academic societies in Japan including the Japanese Society of International Law and the International Law Association.

As EVP of Tohoku University, Prof. Ueki strives to develop Tohoku University's international relationships, academic affairs, and its global network through active participation in international academic consortia and other cooperative activities.

**PROF. DR.
HILTRAUD CASPER-HEHNE**
GÖTTINGEN UNIVERSITY – VICE-PRESIDENT
FOR INTERNATIONAL AFFAIRS



Scientific Career

- Since 2009 Vice-President for International Affairs, Göttingen University, Germany (2009–2011 additionally Vice-President for Research)
- Since 2004 W2 Professor of German as a Foreign Language and Linguistics, Department of Intercultural German Studies, Department of German Philology, Göttingen University
- 2003 Venia Legendi; university teaching credentials for the subject “German as a Foreign Language (Intercultural German Studies)”, Faculty of Languages and Literature, University of Bayreuth; Post-doctoral degree on the topic: “Everyday intercultural communication between German native speakers and Anglophone US-American foreign language learners. Face work in narrative, discursive and directive discussions”
- 1997–2004 Commissioned by the Institute for German Studies, responsible for the development and implementation of the degree programme “German as a foreign and second language” for students in teachers’ training, TU Braunschweig
- 1996–2004 Deputy Head of Language Centre, Technical University (TU) Braunschweig, Germany
Department Head “German as a Foreign Language”
Academic Counsellor, Language Centre, TU Braunschweig
- 1990–1992 Distance Learning Business Administration, Business Academy Bad Harzburg, Germany
- 1989–1995 Teacher of special tasks; Head of International Summer Courses, Language Centre, TU Braunschweig
- 1987 Doctorate in linguistics, Institute for German Studies, TU Braunschweig
- 1986–1988 University Lecturer, German Academic Exchange Service (DAAD), Department of German Studies, School of Mechanical Engineering Shanghai, People’s Republic of China
- 1982 Degree course in German Studies/History and English Literature, Higher Teaching, TU Braunschweig, 1st state examination

Awards and Honours

- 2010 Distinguished Visiting Professor at Nanjing University, People’s Republic of China
- 2009 Honorary Professor at the Beijing Foreign Studies University, People’s Republic of China

Appointments to national and international posts, committees, expert groups

- Since 2018 Head of the „Regional Research Team Europe“ for the World Humanities Report in cooperation with UNESCO-CIPSH
- Since 2018 Member, Ad-hoc Expert Group „European Universities“, EU Commission, Brussels, Belgium
- Since 2018 Chair of the working group „China Competence in Lower Saxony“ of the Ministry of Science and Culture of Lower Saxony
- Since 2018 Member, Steering Committee „Global Education“, British Council, London, UK

Appointments to national and international posts, committees, expert groups

- Since 2016 Member, Board of German Academic Exchange Service, Bonn, Germany
- Since 2015 Member, Language Advisory Board, Goethe Institute, Munich, Germany
- Since 2015 Member, Advisory Board, Society for Intercultural German Studies, Bayreuth, Germany
- Since 2014 Chair, Board of Trustees, Academic Confucius Institute, Göttingen/Nanjing/Beijing
- 2014 – 2016 Member, Executive Board, COIMBRA Group, Brussels
- Since 2014 German Chair, "Intercultural German Studies" Working Group in China, Beijing
- 2014 Chair, Expert Circle on developing of a China strategy, German Federal Ministry of Education and Research (BMBF), Berlin
- Since 2013 Member, Board of Directors, U4 Network; Ghent, Groningen, Uppsala, Göttingen
- 2012 – 2015 Member, Board, Humanities in the European Research Area (HERA), Brussels

University posts, committees, expert tasks forces

- Since 2015 Head, „Refugees“ Task Force, University of Göttingen
- 2007 – 2009 Member of the Senate, University of Göttingen
- 2004 – 2009 China Commissioner, University of Göttingen

Founding activities and memberships

- 2005 – 2012 Founder and CEO, not-for-profit Institute for Intercultural Communication (IIK e.V.), University of Göttingen
- Since 2004 Founder and Director, Institute for German-Chinese Cultural Comparison, University of Göttingen (since Nov. 2005: German-Chinese Institute for Intercultural German Studies and Culture Comparison)



PROF. DR. SHOJIRO NISHIO

OSAKA UNIVERSITY – PRESIDENT

Education

1980	Doctor of Philosophy in Engineering, Kyoto University
1977	Master of Engineering, Kyoto University
1975	Bachelor of Engineering, Kyoto University

Positions Held

Since 2015	President, Osaka University
2013–2015	Distinguished Professor, Osaka University
2013–2015	Director, Cybermedia Center, Osaka University
2007–2011	Executive Vice-President, Osaka University
2004–2006	Advisor to the President, Osaka University
2003–2007	Dean, Graduate School of Information Science and Technology, Osaka University
2002–2015	Professor, Graduate School of Information Science and Technology, Osaka University
2001–2008	Programme Director (Information and Networking Area), Ministry of Education, Culture, Sports, Science and Technology (MEXT)
2000–2003	Founding Director, Cybermedia Center, Osaka University
1998–2002	Professor, Graduate School of Engineering, Osaka University
1992–1998	Professor, School of Engineering, Osaka University
1992–1992	Associate Professor, School of Engineering Science, Osaka University
1989–1992	Associate Professor, Education Center for Information Processing, Osaka University
1988–1989	Associate Professor, School of Engineering Science, Osaka University
1988–1988	Visiting Fellow, British Columbia Advanced Systems Institute, Canada
1980–1981	Visiting Research Associate Professor, University of Waterloo, Canada
1980–1988	Assistant Professor, School of Engineering, Kyoto University

Memberships and Awards

Memberships

- Institute of Electrical and Electronics Engineers (IEEE) (Computer Society, Technical Committee on Data Engineering, Asian Coordinator: 1992–1997)
- Association for Computing Machinery (ACM)
- Information Processing Society of Japan (IPSJ) (a member of the board of trustees: 1999–2000, Vice-President: 2012–2013, and President 2017–2019)
- Institute of Electronics, Information and Communication Engineers (IEICE)
- Database Society of Japan (DBSJ) (a member of the board of trustees and auditors: 2002–2011, President: 2012–2013)
- Japan Federation of Engineering Society (JFES)
- Fellow of IEEE, IPSJ, IEICE, and JFES.
- Science Council of Japan (2006–Present, Chair of Informatics: 2011–2014)

Memberships and Awards

Honours and Awards

- Person of Cultural Merits (2016)
- Distinguished Achievement and Contributions Award in the information science and technology field from Ministry of Education, Culture, Sports, Science and Technology (MEXT) (2014)
- Distinguished Achievement and Contributions Award from IEICE (2014)
- Distinguished Achievement Award from Tateisi (OMRON) Science and Technology Foundation (2012)
- Medal with Purple Ribbon from the Emperor of Japan (2011)
- Distinguished Achievement and Contributions Award from IPSJ (2011)
- Distinguished Achievement and Contributions Award from DBSJ (2011)
- Distinguished Achievement Award from Funai Foundation for Information Technology (FFIT) (2005)

Area of Expertise

Information science and technology, specialising in data engineering and multimedia systems

Selected Publications

- M. Shirakawa, T. Hara, and S. Nishio: IDF for Word N-grams, *ACM Trans. on Information Systems*, Vol. 36, No. 1, Article No. 5, June 2017.
- M. Shirakawa, K. Nakayama, T. Hara, and S. Nishio: Wikipedia-based Semantic Similarity Measurements for Noisy Short Texts Using Extended Naive Bayes, *IEEE Trans. on Emerging Topics in Computing*, Vol. 3, No. 2, pp. 205–219, June 2015.
- Y. Komai, Y. Sasaki, T. Hara, and S. Nishio: KNN Query Processing in Mobile Ad Hoc Networks, *IEEE Trans. on Mobile Computing*, Vol. 13, No. 5, pp. 1090–1103, May 2014.
- Y. Okaie, T. Nakano, T. Hara, and S. Nishio: Distributing Nanomachines for Minimizing Mean Residence Time of Molecular Signals in Bionanosensor Networks, *IEEE Sensors Journal*, Vol. 14, No. 1, pp. 218–227, Jan. 2014.
- T. Yoshihisa and S. Nishio: A Division-Based Broadcasting Method Considering Channel Bandwidths for NVoD Services, *IEEE Trans. on Broadcasting*, Vol. 59, No. 1, pp. 62–71, Mar. 2013.
- M. Erdmann, K. Nakayama, T. Hara, and S. Nishio: Improving the Extraction of Bilingual Terminology from Wikipedia, *ACM Trans. on Multimedia Computing, Communications and Applications*, Vol. 5, No. 4, Article 31, pp. 31:1–31:17, Oct. 2009.
- K. Harumoto, T. Nakano, S. Fukumura, S. Shimojo, S., and S. Nishio: Effective Web Browsing through Content Delivery Adaptation, *ACM Transactions on Internet Technology*, Vol. 5, No. 4, pp. 571–600, Nov. 2005.
- H. Hayashi, T. Hara, and S. Nishio: Updated Data Dissemination for Updating Old Replicas in Ad Hoc Networks, *ACM/Springer Personal and Ubiquitous Computing Journal*, Vol. 9, No. 5, pp. 273–283, Sept. 2005.
- S. Nishio: Opening up New Vistas on Advanced Multimedia Content Processing, *New Generation Computing*, Vol. 18, No. 4, pp. 295–303, Sept. 2000.

- T. Hara, K. Harumoto, M. Tsukamoto, and S. Nishio: Database Migration: A New Architecture for Transaction Processing in Broadband Networks, *IEEE Trans. on Knowledge and Data Engineering*, Vol. 10, No. 5, pp. 839–854, Sept.–Oct. 1998.
- C.-L. Goh, M. Tsukamoto, and S. Nishio: Knowledge Discovery in Deductive Databases with Large Deduction Results: The First Step, *IEEE Trans. on Knowledge and Data Engineering*, Vol. 8, No. 6, pp. 952–956, Dec. 1996.
- J. A. Brzozowski and S. Nishio: On Serializability, *Inter. J. of Comput. and Infor. Sciences*, Vol. 14, No. 6, pp. 387–403, Dec. 1985.
- S. Nishio, T. Ibaraki, H. Miyajima, and T. Hasegawa: Evaluation of the File Redundancy in Distributed Database Systems, *IEEE Trans. on Software Eng.*, Vol. SE-11, No. 2, pp. 199–205, Feb. 1985.

TETSUYA KIMURA
 CONSULATE GENERAL IN MUNICH,
 GERMANY – CONSUL GENERAL



Year of Birth

1962 in Kyoto, Japan

Career

Since 2017	Consul General, Consulate General in Munich, Germany
2015	Director-General, Japan Sports Agency
2012	Chamberlain to H.I.H. The Crown Prince
2012	Minister, Permanent Mission of Japan to the United Nations
2008	Counsellor, Permanent Mission of Japan to the United Nations
2006	Director of the Human Rights and Humanitarian Affairs Division, MOFA
2004	Director of the Terrorism Prevention Division, MOFA
2003	Counsellor, Embassy of Japan in Germany
2002	First Secretary, Embassy of Japan in Germany
2000	First Secretary, Embassy of Japan in Indonesia
1987–1988	Political Science studies at the Ludwig Maximilian University of Munich – “Magister” degree graduation from Geschwister-Scholl-Institute for Political Science
1986	Entered the Ministry of Foreign Affairs
1986	Graduation from Tokyo University (Law Faculty)

**PROF. DR.
MASAHIKO HAYASHI**
JSPS BONN OFFICE JAPAN SOCIETY FOR
THE PROMOTION OF SCIENCE – DIRECTOR



Education

- 1986 Ph.D. (Doctor of Science) received from the University of Tokyo
- 1981–1986 Graduate student at the University of Tokyo with a major in astronomy
- 1977–1981 Undergraduate student at the University of Tokyo

Professional Career

- Since 2018 Director, JSPS Bonn Office, Japan Society for the Promotion of Science
- 2018 Professor, National Astronomical Observatory of Japan (NAOJ), National Institutes of Natural Sciences (NINS)¹
- 2012–2018 Director General of NAOJ, NINS, and Vice-President of NINS (April 2015–March 2018: Executive Director of NINS)
- 2010–2012 Professor, Department of Astronomy, School of Science, The University of Tokyo (April 2011–March 2012: Department Chair)
- 1998–2010 Professor, Subaru Telescope, NAOJ (April 2006–May 2010: Director, Subaru Telescope, NAOJ)
- 1994–1998 Associate Professor, Subaru Telescope, NAOJ
- 1987–1994 Assistant Professor, Department of Astronomy, The University of Tokyo
- 1986–1987 Postdoctoral Fellow, Japan Society for the Promotion of Science, affiliated to the Nobeyama Radio Observatory of the Tokyo Astronomical Observatory²

¹ National Astronomical Observatory of Japan was incorporated with four other research institutes to form the National Institutes of Natural Sciences, a legal entity, in April 2004.

² Tokyo Astronomical Observatory was reorganized to be the National Astronomical Observatory of Japan in July 1988.

**PROF. DR.
KATJA BECKER**
GERMAN RESEARCH FOUNDATION
(DFG) – VICE-PRESIDENT



Academic Education

- 1990–1991 Internships at the Kantonsspital Basel (Internal Medicine), Heidelberg University (Cardiac Surgery), and at the John Radcliffe Hospital Oxford (Pediatrics)
- 1984–1991 Medical education, Heidelberg University

Advanced Professional Degrees

- 1998 Medical specialisation in Biochemistry (Facharzt)
- 1996 Habilitation in Biochemistry, Heidelberg University
- 1993 Approbation as Medical Doctor
- 1991 Final Medical Examination
- 1986–1988 Doctoral thesis, Centre of Biochemistry, Heidelberg University (summa cum laude)

Positions Held

- Since 2014 Vice-President German Research Foundation (DFG)
- 2009–2012 Vice-President (Research) of the Justus Liebig University Giessen
- Since 2000 C4/W3-Professor for Biochemistry and Molecular Biology (chair) at the Interdisciplinary Research Centre, Giessen University
- 1999–2000 Junior Group Leader, Research Centre for Infectious Diseases, Würzburg University
- 1999 Associate Professor, Center of Biochemistry, Heidelberg University
- 1994 Postdoctoral Researcher, Institute of Pathology, Sydney University
- 1993–1999 Assistant Professor, Centre of Biochemistry, Heidelberg University
- 1992–1993 Medical Assistant University Children's Hospital, Heidelberg (Clinical work and Research in Ghana and Nigeria)
- 1988–1989 DFG Scholar at the Institute of Pathology, Sydney University, Australia

Other Activities

Honours and Awards

- 2010 Rudolf-Leuckart-Medal of the German Society of Parasitology
- Since 2009 Member of the German National Academy of Sciences "Leopoldina"
- 2003 Carus-Medal of the German Academy for Natural Scientists "Leopoldina"
- 2003 Funding of the Symposium "Redox Metabolism in Malaria: From Genes to Drugs", Bellagio, Italy, by the Rockefeller Foundation
- 2000–2005 Member of the "Junge Akademie" at the "Berlin-Brandenburgische Akademie der Wissenschaften" and the "Leopoldina"
- 1998 Friedrich-Fischer-Nachlass, Heidelberg University
- 1994 Boehringer Mannheim Research Scholarship
- 1989 Ludolf-Krehl-Preis, "Südwestdeutsche Gesellschaft für Innere Medizin"

Other Activities

Other Professional Activities

- Since 2016 Member of the Scientific Advisory Board “Zentrum für Infektionsforschung”, Würzburg University
- Since 2014 Speaker of the DFG Priority Programme SPP 1710 “Dynamics of thiol-based redox switches in cellular physiology”
- Since 2010 Mentor for female early career academics (Pro Professur and SciMento)
- Since 2013 SAB Kerckhoff Herzforschungsinstitut, Bad Nauheim
- 2007–2014 Section Speaker Giessen Graduate Center for the Life Sciences
- Since 2006 SAB “Center for International Development and Environmental Research”
- 2005–2006 Sabbatical Department of Cell Biology, The Scripps Research Institute, La Jolla, CA, USA
- 2004–2005 Speaker Interdisciplinary Research Centre, Giessen University

Memberships in Learned Societies

- Leopoldina, German National Academy of Sciences
- German Society for Parasitology
- German Society for Tropical Medicine and International Health
- German Society for Biochemistry and Molecular Biology
- International Society for Free Radical Research

Publications – 10 most important out of 243, H-index: 60 (Google Scholar, January 2018)

- Krieg R, Jortzik E, Goetz A-A, Blandin S, Wittlin S, Elhabiri M, Rahbari M, Nuryyeva S, Voigt K, Dahse HM, Brakhage A, Beckmann S, Quack T, Grevelding CG, Pinkerton AB, Schönecker B, Burrows J, Davioud-Charvet E, Rahlfs S, Becker K (2017) Arylmethylamino steroids as antiparasitic agents. *Nat Commun* 8: 14478.
- Wang L, Delahunty C, Fritz-Wolf K, Rahlfs S, Prieto JH, Yates III JR, Becker K (2015). Characterization of the 26S proteasome network in *P. falciparum*. *Scientific Reports* 5: 17818.
- Kasozi D, Rahlfs S, Mohring F, Meyer AJ, Becker K (2013) Real-time imaging of the intracellular glutathione redox potential in the malaria parasite *Plasmodium falciparum*, *PLoS Pathogens* 9: e1003782.
- Fritz-Wolf K, Kehr S, Stumpf M, Rahlfs S, Becker K (2011). Crystal structure of the human thioredoxin reductase-thioredoxin complex. *Nature Commun* 2: 383, doi: 10.1038/ncomms1382.
- Perez-Jimenez R, Li J, Kosuri P, Sanchez-Romero I, Wiita AP, Rodriguez-Larrea D, Chueca A, Holmgren A, Miranda-Vizueté A, Becker K, Cho SH, Beckwith J, Gelhaye E, Jacquot JP, Gaucher E, Sanchez-Ruiz JM, Berne B, Fernandez JM (2009). Diversity of chemical mechanisms in thioredoxin catalysis. *Nature Struct Mol Biol* 16: 890–896.
- Koncarevic S, Rohrbach P, Deponte M, Prieto H, Yates J, Rahlfs S, Becker K (2009) *Plasmodium falciparum* imports the human protein peroxiredoxin 2 for peroxide detoxification. *Proc Natl Acad Sci USA* 106: 13323–13328
- Urig S, Fritz-Wolf K, Réau R, Herold-Mende C, Tóth K, Davioud-Charvet E, Becker K (2006) Undressing of phosphine gold(I) therapeutic agents as irreversible inhibitors of human disulfide reductases. *Angew Chem Int Ed Engl* 45: 1881–1886.

- Fritz-Wolf K, Becker A, Rahlfs S, Harwaldt P, Schirmer RH, Kabsch W, Becker K (2003). X-ray structure of glutathione S-transferase from the malarial parasite *Plasmodium falciparum*. *Proc Natl Acad Sci USA* 100: 13821–13826.
- Kanzok S, Fechner A, Bauer H, Ulschmid JK, Müller HM, Botella-Munoz J, Schneuwly S, Schirmer RH, Becker K (2001). Substitution of the thioredoxin system for glutathione reductase in *Drosophila melanogaster*. *Science* 291: 643–646.
- Becker K, Sawides S, Keese M, Schirmer RH, Karplus PA (1998). Enzyme inactivation through sulfhydryl oxidation by physiologic NO-carriers. *Nature Struct Biol* 5: 267–271.

Patents

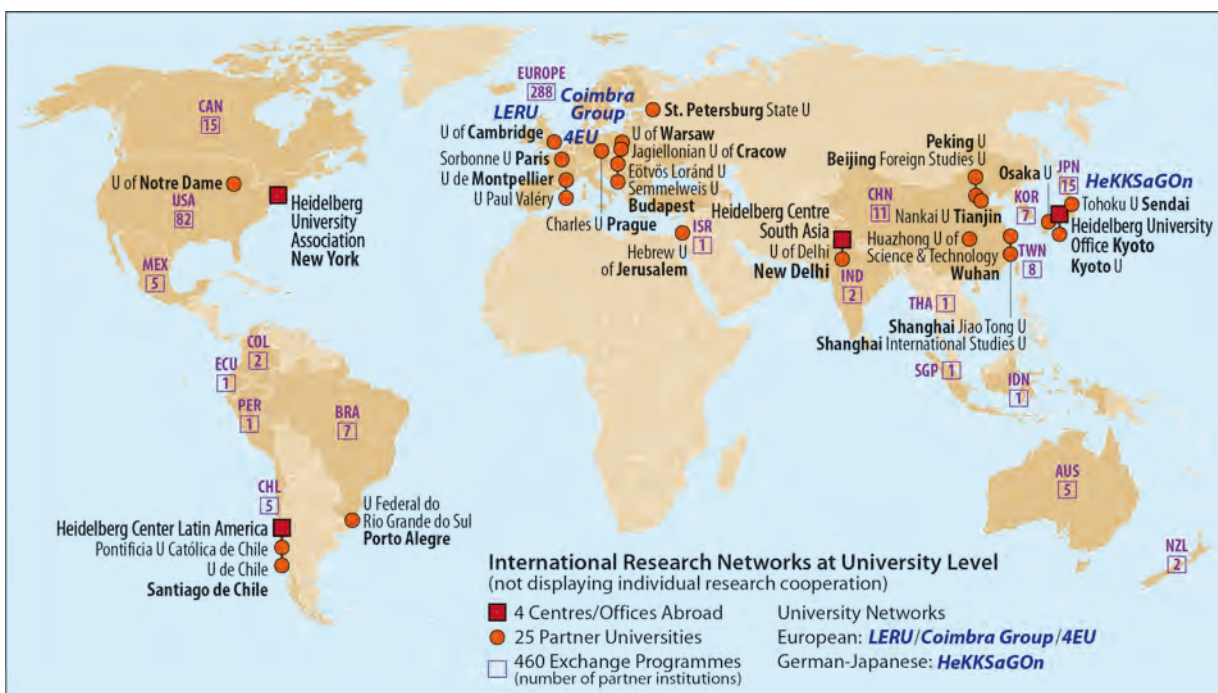
Presently 6 patents in the areas of drug discovery and redox biology.



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

The Future of the HeKKSaGOn Alliance: Priorities, Challenges, Chances

Prof. Dr. Dr. h.c. Bernhard Eitel



FOREIGN OFFICES AND REGIONAL ACADEMIC INSTITUTIONS



HEIDELBERG OFFICE EAST ASIA

- Kyoto
- Est 14 April, 2015

- Focus:

- Fostering HeKKSaGOn-activities
- Governing research collaborations
- Exchange of scholars and students
- Networking



INTERNATIONAL STUDENT MOBILITY

- Joint and double-degree study programmes
Transcult. Studies (M.A.) – Kyoto Uni. (start term 2018)
- Strategic pathways for flexible student mobility
HeKKSaGOn-Study Alliance?

FACTS AND FIGURES

International students **5,402**
 Japan 70 (1.2 %)

International student exchange programmes
 Asia 50
 Japan 17 (34 %)



NEXT HEKKSAGON CYCLE

Further increasing numbers of academic collaboration and exchange on all levels

- Develop research based and operational strategies
- Joint infrastructure
- Research and teaching activities
- University hopping
- Serve as agency to support contacts for students

Increasing research visibility by joint projects and publications (referring HeKKSaGOn)

- Compile scientific competences
- Provide academic fuel

Increase social impact

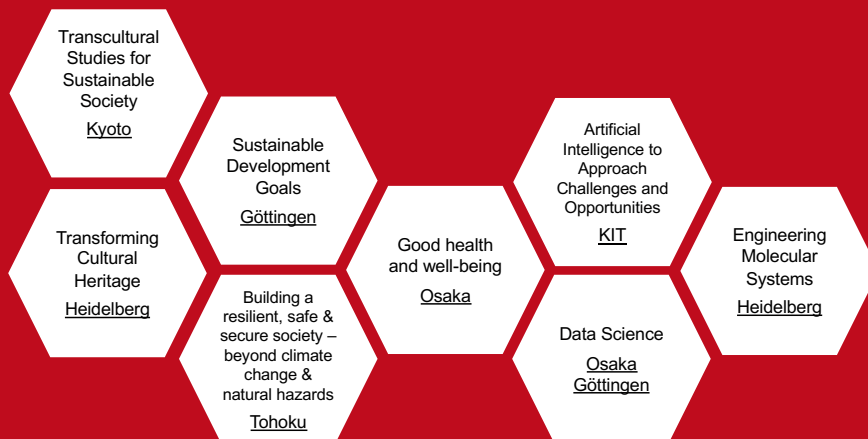
- Capacity building for future generations
- Advising and consulting
- Activate policy makers



HOW CAN WE REALIZE THOSE GOALS?

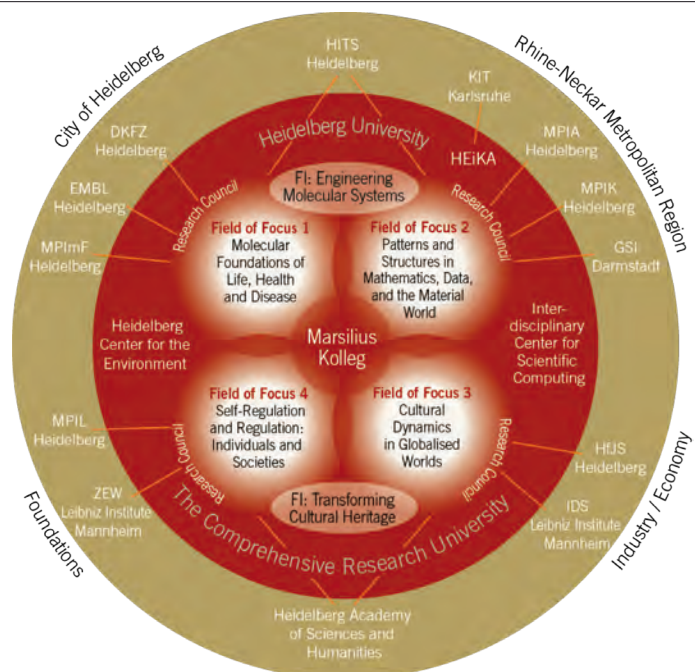
INTERWEAVING CORE STRATEGIES

PROPOSED PRIORITY AREAS



STRATEGIC CONCEPT CONTINUING RENEWAL

- 4 Fields of Focus
 - 2 Flagship Initiatives
 - 3 interdisciplinary incubators
 - Set of measures for continuing structural and institutional renewal
- ... embedded in a rich research environment and international collaborations



THE TWO FLAGSHIP INITIATIVES

- Emerging hubs for transformative research with high potential for scientific breakthrough
- Societal impact at the boundaries of disciplines
- Driven by concepts and methods

Engineering Molecular Systems



Transforming Cultural Heritage



THE TWO FLAGSHIP INITIATIVES

FI I: Engineering Molecular Systems (EMS)

- Uses strengths of Heidelberg Molecular Life Sciences (HMLS) and Natural Sciences for a Heidelberg-specific engineering
- Strategic setting: “Heidelberg for Life”
- Nanoscale engineering of novel carbon-based materials and systems
- In medicine and for abiotic purposes (e.g. artificial retina, biosensors, synthetic biology, DNA nanotechnology)



THE TWO FLAGSHIP INITIATIVES

FI II: Transforming Cultural Heritage (TCH)

- Builds on outstanding strengths, e.g. Transcultural Studies, est. international networks and expertise (Area Studies)
- Broad understanding of Cultural Heritage
- Connects Cultural Heritage research with current challenges in a changing world (e.g. migration, integration, diversity, conflicts, legal frameworks etc.)





HeKKSaGOn
HEIDELBERG UNIVERSITY | KYOTO UNIVERSITY | GÖTTINGEN UNIVERSITY
 NETWORK OF UNIVERSITIES

New Developments at Kyoto University

Juichi Yamagiwa
President, Kyoto University

The 7th HeKKSaGOn Japanese-German
 University Presidents' Conference
*"The Future of the HeKKSaGOn Alliance: Priorities,
 Challenges, Chances"*

Sep. 12–13, 2019 Heidelberg University

KYOTO UNIVERSITY

京都大学



1

Contents of Today's Presentation

1. Kyoto University's Initiatives as a "Designated National University" (DNU)
2. Kyoto University's Global Engagement

KYOTO UNIVERSITY

2

京都大学

1. Kyoto University's Initiatives as a "Designated National University" (DNU)

KYOTO UNIVERSITY

3

京都大学

Kyoto University's Designated National University (DNU) Initiatives

- ① A flexible and dynamic approach to knowledge creation, cultivating originality
 - Kyoto University Institute for Advanced Study (KUIAS)
 - On-site Laboratories
- ② Generating a high-level and diverse flow of talent
 - Kyoto University International Undergraduate Program (Kyoto iUP)
- ③ Exploring new forms of social engagement
 - Unit of Kyoto Initiatives for the Humanities and Social Sciences
 - Industry-Government-Academia Collaboration (The Kyoto University Model)
- ④ World-class management style
 - Office of the Provost

KYOTO UNIVERSITY

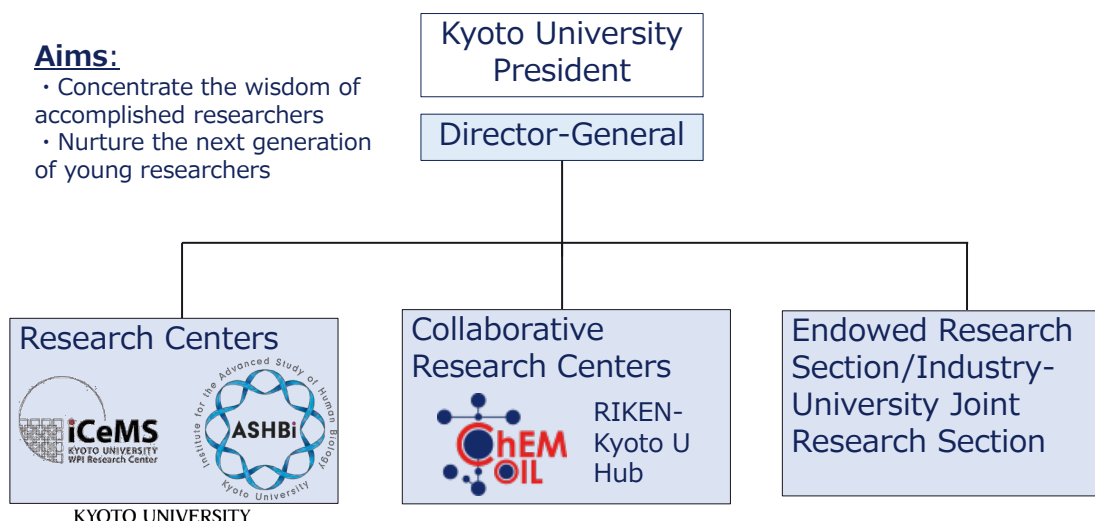
4

①-1 A flexible and dynamic approach to knowledge creation, cultivating originality

Kyoto University Institute for Advanced Study (KUIAS)

Aims:

- Concentrate the wisdom of accomplished researchers
- Nurture the next generation of young researchers



KYOTO UNIVERSITY

5

①-2 A flexible and dynamic approach to knowledge creation, cultivating originality

Kyoto University Institute for the Advanced Study of Human Biology (ASHBi)



Director
Mitinori Saitou

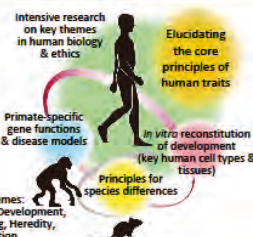
Mitinori Saitou is a world leader in germ cell biology and *in vitro* reconstitution of germ cell development. The Institute will use a multi-disciplinary approach and uncover the core principles of human traits, including diseased states.

Purpose

ASHBi investigates the core concepts of human biology with a particular focus on genome regulation and disease modeling, creating a foundation of knowledge for developing innovative and unique human-centric therapies.

Research

The Institute will target humans and non-human primates as major research subjects in an effort to uncover the core principles of human beings and disease states, through a multi-disciplinary approach.



Features

- Genome Sequence
- Transcriptome
- Epigenome
- Nuclear Structure
- Explaining species differences
- Research collaboration between the life sciences and mathematics, and between the life sciences and the humanities
- Core facilities with leading-edge technologies, such as single-cell genome information analysis and primate genome engineering
- Prioritized support for overseas PIs and links with key international institutions (including EMBL, University of Cambridge, Karolinska Institutet)
- Strong links with the Kyoto University Hospital
- Prioritized support for early-career PIs

Satellite

Shiga University of Medical Science
Research Center for Animal Life Science

The primate genome engineering core will provide macaque tissues and create gene knockout macaques for primate-specific traits for disease modeling and biological analysis.

KYOT

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On-site Laboratories Total no. established: **11** (as of August 2019)

Aims:

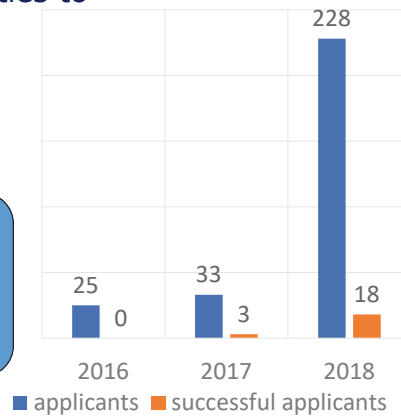
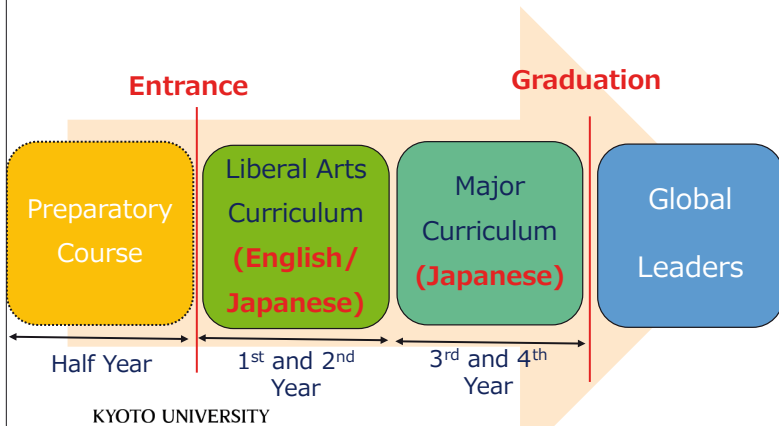
- Promotion of world-leading advanced research
- development of high quality human resources, recruitment of talented international students, and expansion of collaboration with partners



• **Inbound** (at KU): 2
 • **Outbound** (at partner institution): 8
 • **Crossbound** (both): 1

Kyoto University International Undergraduate Program (Kyoto iUP)

Aim: To provide outstanding education opportunities to excellent students from around the world



Unit of Kyoto Initiatives for the Humanities and Social Sciences



Aim: A new approach to the social sciences and humanities to address global issues.

- Asian Humanities:
 - (1) Asian thought, culture, and history.
 - (2) from an Asian vantage point.
- University-wide symposia
- A series of books
- Dissemination of information to society in multiple languages and through diverse forms of media.



Industry-Government-Academia Collaboration (The Kyoto University Model)

Aims:

- Strengthen links with society
- accelerate industry-government-academia collaboration

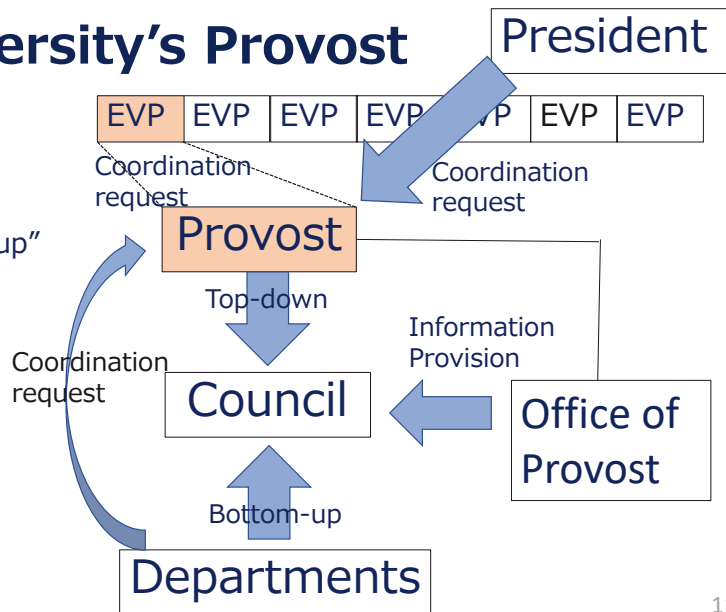


④ World-class management style

Kyoto University's Provost

Aim:

- Strategic planning in cooperation between "top-down" policy and "bottom-up" ideas



Kyoto University's Global Engagement

Double Degree and Joint Degree Programs

	Double Degree	Joint Degree
Asia	17	
North America	1	1
Europe	3	1
Total	21	2

Joint Degree M.A. Program in Transcultural Studies with Heidelberg University

- Japan's first international joint degree program in a humanities field.

FY2018		FY2019	
In	Out	In	Out
5	1	5	3

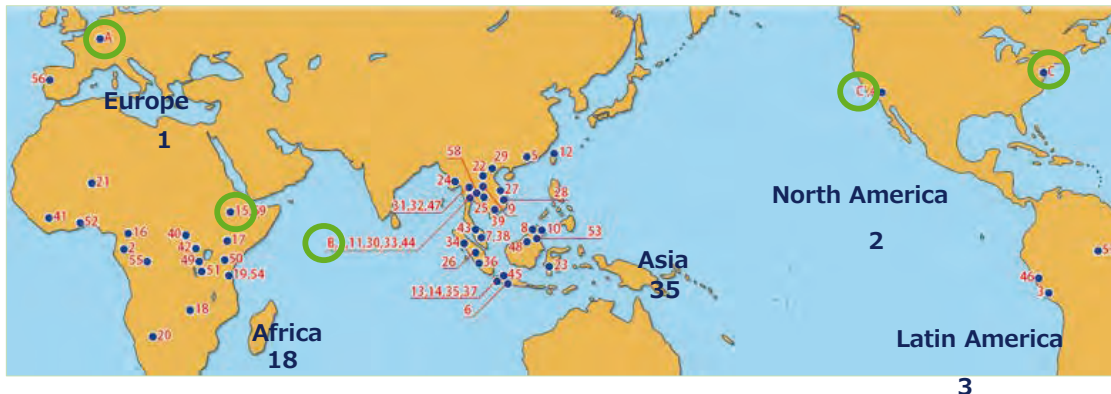
University-wide Overseas Centers and Offices

- Boosting Collaborative Research Activities
- Supporting Education Activities
- Strengthening Kyoto University's Networks
- Promoting Internationalization

Name	Location	Year approved for Establishment
European Center	Heidelberg(German)	2014
ASEAN Center	Bangkok(Thailand)	2014
North American Center	Washington D.C. (the United States)	2018
San Diego Liaison Office	San Diego (the United States)	2017
Africa Office	Addis Abeba (Ethiopia)	2019

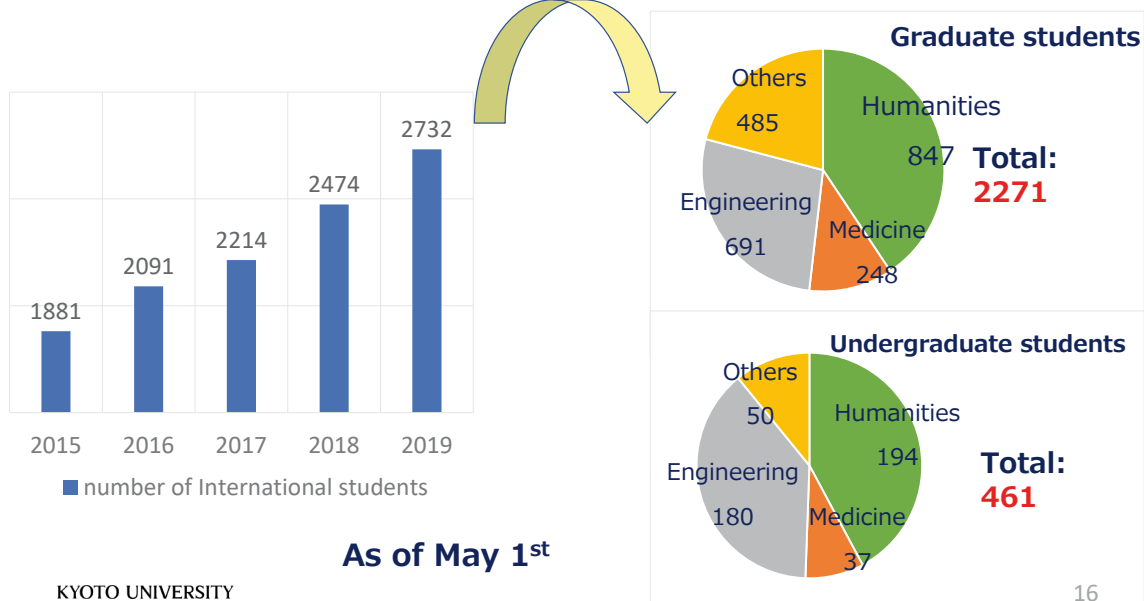


Kyoto University's overseas facilities



Total=59
As of 1 May 2019

Number of International students



Omoro Challenge Program (Omoro: "Interesting or Exciting")

Aims:

- To foster "wisdom and an adventurous spirit"
- cultivate global human resources

Program

- Customized short-term study abroad program
- Experience-based learning program

Period

- Three weeks or more

Support: ¥
 KU provides funding

Destinations (2016-2018)



(Number of participants in 2016-2018: **87**)

Omoro Challenge Program (2)



Thank you for your attention!



Highlights from KIT and opportunities for cooperation

Prof. Dr. Thomas Hirth, Karlsruhe Institute of Technology
Heidelberg, September 12, 2019

Executive Board



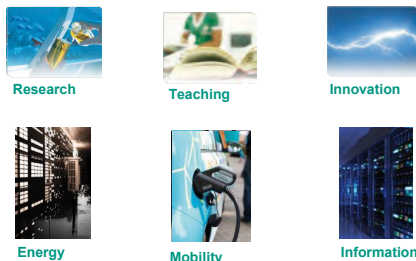
KIT – The Research University in the Helmholtz Association

www.kit.edu

Karlsruhe Institute of Technology (KIT) The Research University in the Helmholtz Association



- One legal unit
- The mission
- Three core tasks
- Profile sharpening topics



25.100 students,
24% international
5.000 employees in
research and teaching,
20% international

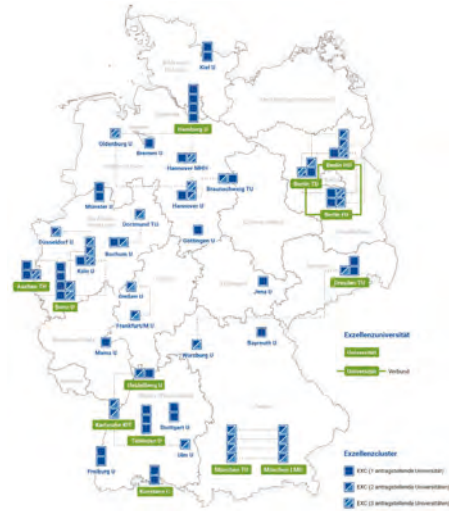
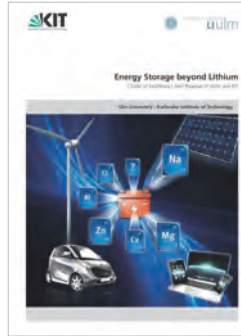


Status of August 2019

The Executive Board of KIT



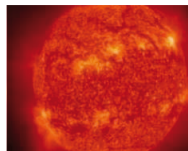
KIT was successful in the Excellence Strategy Competition



- On-site assessment of KIT took place in March, 2019
- Funding decision for Universities of Excellence in July, 2019
- KIT is among ten Universities and one University Consortium of Excellence chosen by the Excellence Commission

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

8 KIT Centers Link Discipline Diversity Opportunities for cooperation



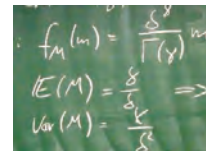
Energy



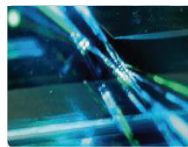
Mobility Systems



Information Systems Technologies



Mathematics in Sciences, Engineering, and Economics



Materials



Climate and Environment



Elementary Particle and Astroparticle Physics



Humans and Technology

6

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

CELEST – Launch of the largest German research platform for electrochemical storage

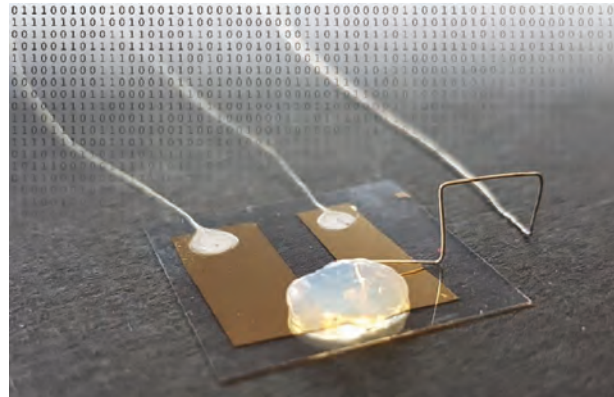


- CELEST bundles know-how from 29 institutes at the three partner institutions
- Combines knowledge-oriented research, practical development and innovative production technology
- Objectives – improved communication and cooperation between the participating scientists; Initiation of new, interdisciplinary cooperation

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

World's smallest transistor – contribution to energy efficiency in information technology

- Development of the world's smallest transistor at the Institute for Applied Physics (APH) of KIT
- Power switching by shifting a single atom ("single-atom transistor")
- Operation at room temperature, no use of semiconductors
- Allows much lower switching energies than conventional technologies (factor 10,000 below)
- Could significantly contribute to energy efficiency in information technology



8

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

Start of the project “reFuels – re-thinking Fuels”



With the project “reFuels – re-thinking Fuels,” the state government, Karlsruhe Institute of Technology (KIT), and industry wish to establish alternatives to fossil fuels.

On January 18, 2019, State Minister of Transport Winfried Hermann officially started the project within the framework of the Strategy Dialog Automotive Industry BW

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

InnovationCampus „Mobility of the Future“

- **Objective** – To create new disruptive technologies and potential for leap-forward innovation through excellent basic mobility and production research
- Research focus - "Additive Manufacturing" and "Emission-free drives"
- Joint initiative of KIT and the University of Stuttgart
- Embedded in the Strategy Dialog Automotive Industry BW



Source: in pact Media Verlag

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

Test Area Autonomous Driving Baden-Württemberg



The Deputy Prime Minister Thomas Strobl and Transport Minister Winfried Hermann opened in Karlsruhe, the test area autonomous driving Baden-Württemberg.

Konsortium



Operator



The operator of the test area is the Karlsruher Verkehrsverbund.

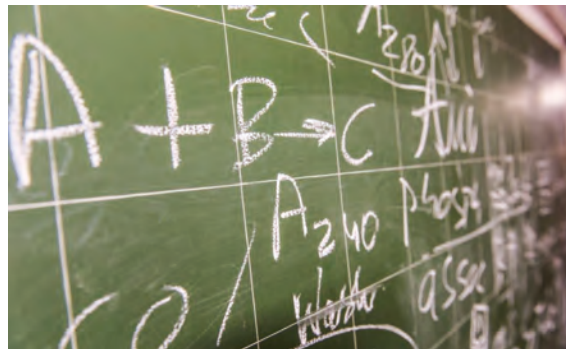


On the way to the Karlsruhe Research Factory



With the groundbreaking ceremony of the cooperation partners Karlsruhe Institute of Technology and Fraunhofer-Gesellschaft, the "Karlsruhe Research Factory" has begun its construction. From the end of 2020, new production technologies will be developed, planned, tested and transferred into the industry much faster than before, using state-of-the-art digitization methods.

MathSEE – New KIT Center for Mathematics started



The new KIT Center "MathSEE" (Mathematics in Sciences, Engineering, and Economics) pools the interdisciplinary mathematical research at KIT since October 2018. The Collaborative Research Center 1173 "Wave Phenomena: Analysis and Numerics" and other existing cooperations form the basis for the establishment of MathSEE.

THINKTANK Industrial Resource Strategies



Participating companies and associations



Decoupling of resource consumption and economic growth



Prime Minister Kretschmann, Minister for Environment Untersteller and Minister for Economy Minister Hoffmeister-Kraut presented the think tank "Industrial resource in the Government Press Conference in Stuttgart, Germany.

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

German Startup Monitor 2018 and Founding Radar 2018



The KIT once again occupies the **2nd place** among the top 10 startup universities at the German Startup Monitor 2018 by the Bundesverband Deutsche Startups e.V.



In the founding radar of the Stifterverband in 2018, KIT ranks **third** among the major German universities.

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

Groundbreaking for the ZEISS Innovation Hub @ KIT



New ZEISS site at one of the most innovativelocations in Germany – New space for spinoffs and enhanced collaboration between business and academia – 12,000 m² of flexible space thanks to an investment of EUR 30 million

Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

50 Years of Informatics in Karlsruhe



Celebration of the anniversary of the introduction of the field of computer science in Karlsruhe, the founding of the "Institute of Computer Science" and the introduction of the field of computer science in 1969 at the former University of Karlsruhe (TH), now KIT.

It was a milestone in the success story of computer science in Germany. The celebration included an exhibition and a panel discussion with Minister of Science of Baden-Württemberg, Theresia Bauer.

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Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

KIT builds relationships with Silicon Valley

- Kick-off for new platform "KIT-Link" with event in San Francisco
- Event in the program of the delegation trip of the prime minister of Baden-Württemberg, Mr. Kretschmann
- The aim of the platform is to further develop the good relationships with universities, companies and alumni in Silicon Valley
- Concrete cooperation between business and science should be initiated and students of KIT should get more opportunities for internships.



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Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

European Partnership for an Innovative Campus Unifying Regions (EPICUR)

University of Amsterdam

University of Freiburg

University of Haute-Alsace

Karlsruhe Institute of Technology (KIT)

Adam Mickiewicz University, Poznań

University of Strasbourg

Aristotle University of Thessaloniki

University of Natural Resources and Life Sciences, Vienna



Prof. Dr. Thomas Hirth – Karlsruhe Institute of Technology

The best way to cope with the challenges of the future is to shape it actively and jointly.



Thank you very much for your attention.

The 7th German-Japanese University Presidents' Conference

The Future of the HeKKSaGOn Alliance: Priorities, Challenges, Chances



September 12, 2019

Executive Vice President
Toshiya UEKI



History & Character ~ “Research First” Principle

2

- **3rd National University after Tokyo and Kyoto**

Founded 1907, currently 112th anniversary
- **Formed with private and local cooperation**

Considerable donations from Furukawa Conglomerate and Miyagi Prefecture
- **Advocating a “Research First” Principle**

The raison d’être of a university is social contribution through research and education based upon this pioneering research



“Sendai is a city most suited for research, and Tohoku University is a force to be reckoned with.” - A. Einstein, 1922




Nobel Prize	1
Orders of Culture	33
Persons of Cultural Merit	52
Japan Academy Prizes	109


History & Character — the Idea of “Open Doors”

3


- **The first Japanese university to accept female students, in 1913**




Chika Kuroda
(Chemistry)




Ume Tange
(Chemistry)




Raku Makita
(Mathematics)
- **We continue to encourage female researchers and promote gender equality.**



Saruhashi Prize 2019 received by Prof. Umetsu at IMR



President Ohno has regular meetings with female researchers at Tohoku University
















[Science Angel] project to encourage female high school students to study STEM subjects



History & Character ~ “Practice Oriented Research & Education”

4

 Kotaro Honda	 KS Steel, NKS Steel Foundation of metallurgy and modern Material Science.	 Hidetsugu Yagi	 Yagi-Uda Antenna Global usage for home TV. IEEE Milestone.	 Toshio Kurokawa	 Mass Examination Propagation of mass examination for Gastric Cancer.
 Junichi Nishizawa	 Laser Diodes “Father of Japanese Microelectronics”. Results in optical communication, semiconductors, etc.	 Koichi Tanaka	 Mass Spectrometry Nobel Laureate in Chemistry 2002 for developing a method of biological macromolecule analyses.	 Shunichi Iwasaki	 Recording Techniques Development of perpendicular recording for effective data storage.
 Fujio Masuoka	 Flash Memory Invention of the Flash Memory.	 Akira Endo	 Compactin Identification of the first statin drug used for treatment of cardiovascular diseases.	 Fumihiko Imamura	 Tsunami Engineering Unique approach for the science behind Tsunamis.



History & Character ~ Our Relationship with Germany

5

“1st Faculty Meeting held in Berlin”

The 6th President, Kotaro Honda, and 3 professors held the very **first faculty meeting in 1909 in Berlin** during their research study in Europe, discussing the budget for faculties.



“The Return Home of a Radio Transmitting Tube”

Yoji Ito, a student of Professor Hidetsugu Yagi, who invented the Yagi-Uda antenna, was presented with a Barkhausen–Kurz tube as a symbol of friendship by Professor Heinrich Barkhausen, under whom he studied in the 1920s at TU Dresden.

In 2016, this symbol of friendship, which was now the only B–K tube in existence, was donated to the Deutsches Museum in Munich by one of Yoji Ito's sons. Professor Emeritus Hiromasa Ito of Tohoku University is also one of Yoji Ito's sons.



Prof. Dr. Wolfgang M. Heckl & Mr. Yoshimasa Ito, son of Yoji Ito



Faculties and Students

6

10 Faculties / **15** Graduate Schools
3 Professional Graduate Schools / **6** Research Institutes

10 Faculties	15 Graduate Schools	3 Professional Graduate Schools
Arts and Letters	Arts and Letters	Law School
Education	Education	School of Public Policy
Law	Law	Accounting School
Economics	Economics and Management	Research Institutes
Science	Science	Institute for Materials Research (IMR)
Medicine	Medicine	Institute of Development, Aging and Cancer (IDAC)
Dentistry	Dentistry	Institute of Fluid Science (IFS)
Pharmaceutical Sciences	Pharmaceutical Sciences	Research Institute of Electrical Communication (RIEC)
Engineering	Engineering	Institute of Multidisciplinary Research for Advanced Materials (IMRAM)
Agriculture	Agricultural Science	International Research Institute of Disaster Science (IRIDeS)
	International Cultural Studies	
	Information Sciences	
	Life Sciences	
	Environmental Studies	
	Biomedical Engineering	



■ Students

17,831

International Student 3,405

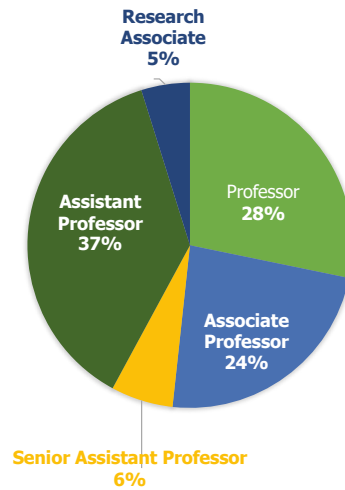
■ Faculty Members

3,127

Student to Faculty Ratio 6 : 1

■ Other Staff Members

3,207

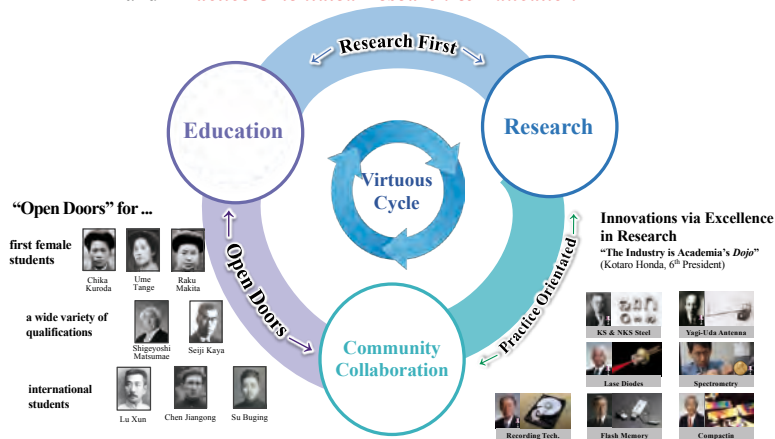


As of May 2019



As a University Engaged with Society

Based on “*Research First*”, “*Open Doors*” and “*Practice Orientated Research & Education*”



● In 2017, first 3 universities selected (Tokyo, Kyoto and Tohoku)

● The new status provides the university with a better platform to contribute even more to communities at home and abroad

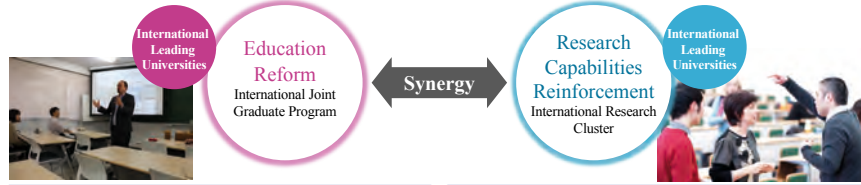
*In 2018, a further 3 universities selected (Osaka, Nagoya and Tokyo Tech)





International Joint Graduate Program

10



Expand Research Fields of Global Top 10
Strong fields of Tohoku University leading global research

Spintronics 2015~	Env. & Earth Sc. 2016~
Physics for the Universe 2017~	Mechanical Eng. 2018~
Material Science 2019~	

Challenge New Disciplines
Fields contributing to the development of humankind

Data Science 2017~	Life Science 2018~
Disaster Science 2019~	Japanese Studies 2019~

Double Doctoral Degree Program
Tohoku - Heidelberg
Law Philosophy (2012)
Arts & Letters Philosophy (2017)

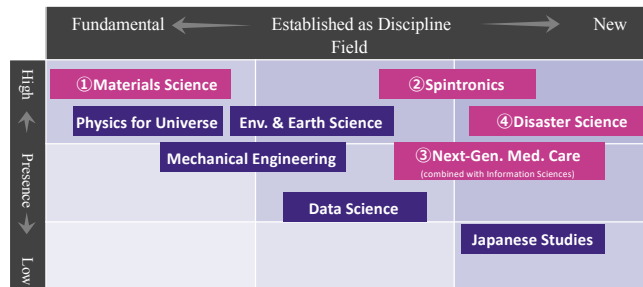
- Consolidating experience & knowledge across departments
- Joint education in strong international collaboration with leading universities
- Providing scholarships and global travel expenses for participants



Core Research Clusters and World Leading Research Centers

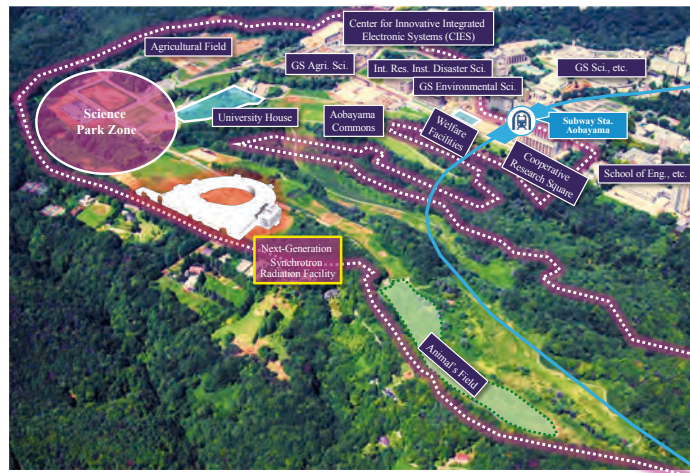
11

- World Leading Research Centers in 4 research areas
- International Research Cluster in 9 fields including 4 WLRCs



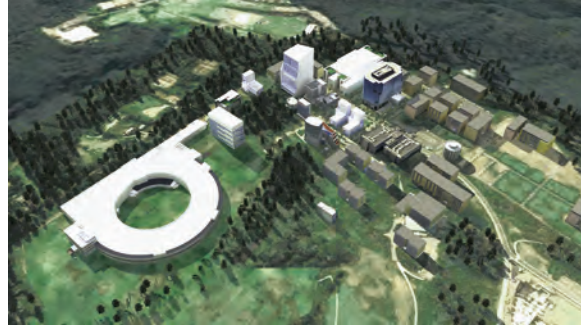
Engagement: New Aobayama Campus (81ha)

12





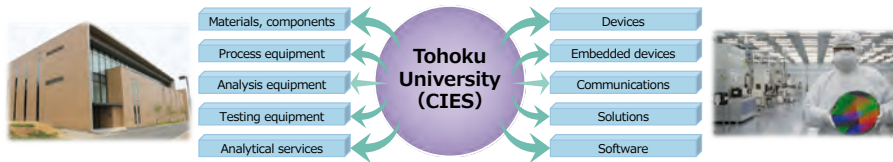
- A Next-Generation Synchrotron Radiation Facility will be established on the university campus.
- Academia and Industry will form a one-to-one partnership to collaborate on industry core applications of advanced SR science toward the development of products.



The new role of universities in an era that demands the integration of different fields

• About 20 companies from manufacturers to retailers forming an innovation ecosystem

• Collaboration with US semiconductor companies
• Number of joint research grants with foreign countries: Ranked No. 1



World Class Research at Tohoku University

- A Leading Pioneer in Spintronics
- Invention of Non-volatile Memory Devices
- Development of New Ultra-low-power Technologies

Special Economic Zones coordinated with government

- Reduction of corporate tax for Special Economic Zones to promote private investment (in information service related industries)
- Subsidies for fixed assets such as advanced research equipment (about 30 billion yen)



@ Kyoto University, March 29th & 30th, 2012



@ KIT, September 29th & 30th, 2016



@ Osaka University, April 12th & 13th, 2018



@ University of Gottingen, September 12th & 13th, 2013



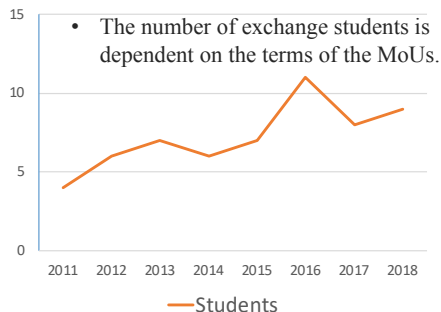
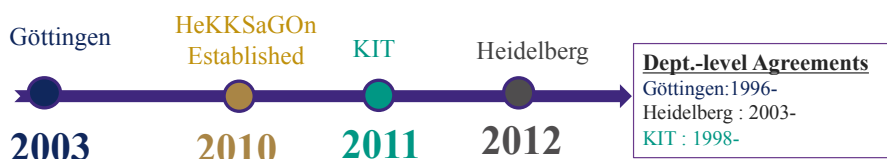
4th HeKKSaGOn Presidents' Conference

"Building Venues for the Creation of New Knowledge"

@ Tohoku University, April 16th & 17th, 2015
Approx. 150 attendees



University-level Academic Exchange Agreements with 3 German Member Universities



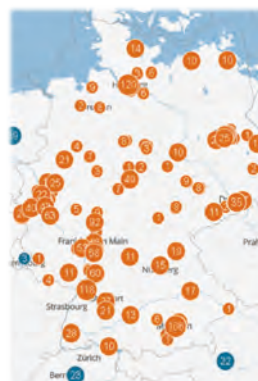
Collaborative Institutions of Tohoku University

Between 2010-2014 (5 years)

151 collaborating institutions
 1,102 co-authored publications

Between 2015-2018 (4 years)

191 collaborating
 1,100 co-authored publications



Number of co-authored papers and the FWCI between HeKKSaGOn's three German universities and Tohoku University

Between 2010-2014 (5 years)

	Quantity Number of Co-publications	Quality Field-weighted Citation Impact
Karlsruhe Institute of Technology	146	1.63
Heidelberg University	42	5.38
University of Göttingen	39	17.08
Total (3 German universities)	227 (Simple count)	8.03 (Average)

Source: Elsevier SciVal Collaboration 2015.04.13

Between 2015-2018 (4 years)

	Quantity Number of Co-publications	Quality Field-weighted Citation Impact
Karlsruhe Institute of Technology	118	3.28
Heidelberg University	60	9.96
University of Göttingen	49	6.00
Total (3 German universities)	227 (Simple count)	5.17(Average)

Source: Elsevier SciVal Collaboration 2019.04.24



**2015: Establishment of Three Major Agendas
for the International Community**



April 2011

**Establishment of "The Institute for
Disaster Reconstruction and
Regeneration Research" at Tohoku University
Initiation of "Reconstruction Action"**



1. International Research Project on Disaster Science
2. Project for the Reconstruction of Community Health Care
3. Project for Environmental Energy
4. ICT Reconstruction Project
5. Tohoku Marine Science Project
6. Nuclear Decommissioning and Environmental Restoration Project
7. Regional Industries Restoration Support Project
8. Industry-University Collaboration Development Project for Reconstruction

July 2015

**"Research with Social Impact"
by Tohoku University**

30 cross-sectoral and interdisciplinary
research developments aimed at solving
important social issues



**Named a Designated National University in June 2017
Development of integrated Tohoku University SDGs**



Thank you for your attention



*We are looking forward to welcoming you all
to Tohoku University in Autumn, 2021*

HILTRAUD CASPER-HEHNE

VICE-PRESIDENT FOR INTERNATIONAL AFFAIRS, UNIVERSITY OF GÖTTINGEN

Developments at the University of Göttingen and Opportunities for Cooperation

7th German-Japanese University Presidents' Conference
Heidelberg, 12th September 2019

Contents

- 1 | General Information
- 2 | Research
- 3 | Teaching
- 4 | Internationalisation
- 5 | Digitalisation
- 6 | Sustainability



General Information

Development at the University and the Göttingen Campus

■ Awards and distinctions received in 2018

- Gottfried Wilhelm Leibniz-Prize: Prof. Dr. Claus Ropers (Physics)
- Heisenberg Professorship: Prof. Dr. Catrin Westphal (Agricultural Sciences)
- Jean Monnet Chair: Prof. Dr. Peter-Tobias Stoll (Law)
- Consolidator Grants of the European Research Council: Prof. Dr. Winfried Rudolf (Philology) and Prof. Dr. Manuel Alcarazo (Chemistry)

■ New Campus member: Max Planck School on Physics, Chemistry and Construction of Life

- Joint project of the University of Göttingen and the MPIs for Biophysical Chemistry and Dynamics and Self-Organization
- Offers a two-year Master programme which is supposed to be followed by three years of doctoral studies, part of a network of other MPIs and the University of Heidelberg



GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

Göttingen
Campus

Research

Proposals for Clusters of Excellence Funding Line

- **Multiscale Bioimaging From Molecular Machines to Networks of Excitable Cells**
- The Making and Unmaking of the Religious
- Primate Cognition Information Integration in a Complex Social World
- Integrative Land Use Science For Sustainable Development

03.02.2020 7th German-Japanese University Presidents' Conference - Heidelberg, 12th September 2019 4

GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

Göttingen
Campus

Research

Important third-party funding (2018/19)

- **National Research Funding**
 - German Research Foundation (DFG): one Excellence Cluster, two Collaborative Research Centres, two Graduate Colleges, five Research Groups, one Priority Programme
- **Federal Funding**
 - Ministry of Education and Research: seven Collaborative Research Projects
 - Federal Ministry of Food and Agriculture: one Research Cooperation
 - Federal Ministry for Economic Affairs and Energy: one Research Project
- **European Research Funding**
 - European Research Council: Three Projects
 - EU: Eight EU Collaborative Research Projects

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GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

Göttingen
Campus

Research

Welcome Culture – for Academics

- **On the Welcome Centre**
 - Göttingen Welcome Centre established in 2008 as a cross-university institution to support international researchers and their families in Göttingen
 - Welcome Centre for the Göttingen Campus and the Südniedersachsen Region established in 2018 to expand the service
- **New developments**
 - 10 regional offices throughout the Lower Saxony region
 - CI and Webportal
 - Support for international academics and science managers
 - Services for all Göttingen Campus members and new target groups such as international PhD students
 - Central aspect: digitalisation

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Teaching

Quality Programme for Student and Academic Services: Göttingen Campus Q^{PLUS}

- **Second phase (2016 - 2020): 15 million EUR were approved to improve study conditions and the quality of teaching**
- **Partner in the Lower Saxony group project eCULT (eCompetencies and Utilities for Learners and Teachers).**
- **Five fields of action**
 - Further development of the introductory phase of studies
 - Temporary professorships and additional chairs
 - strengthening of quality management in Student and Academic Services
 - Additional facilities for teaching staff to upgrade their qualifications
 - Testing of innovative teaching methods



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7



Teaching

Internationalization of Curricula: 'Education for a Global World – At Home and Abroad'

- **Principal Aims**
 - Integration of an international and intercultural dimension & a global perspective in study
 - Open up possibilities for students to gain sound knowledge of specialised issues that have international connections, in conjunction with the content of their study subject
 - Allow for intercultural activities or taking a global perspective on content or methods in teaching
 - Coordinating Internationalisation of the Curricula measures closely with each academic tradition and use the significance of an international dimension and a global perspective as the starting point in that subject
 - Strengthening the networking of students with international partner institutions
- **Central aspect Digitisation: video and web conferences and shared virtual workspaces for teachers and students**



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8



Teaching

„Schlözer“ Programme for Teacher Training

- **Preparing future teachers in three priority areas of action**
 - (1) **“Linking subjects”** – developing teaching concepts for interdisciplinary teaching in natural sciences, social studies, sustainable development and bilingual teaching. Students can get additional qualification certificate
 - (2) **“Developing teaching competencies”** – improving competence to reflect and research expertise for student teachers. Focus on collecting video documentation and method consultancy
 - (3) **“Fostering Diversity”** – developing awareness for diversity and language issues in teacher training. Focus on developing a coherent teaching concept
- **Funding: app. 385,000 € / year**



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Internationalisation

European Universities Initiative

Principal Aims of European Universities

- Increase of performance capability and competitiveness of the European Higher Education Area with a strong knowledge triangle of Education, Research and Innovation by improving the quality, performance and attractiveness of European Universities
- Support for a united and strong Europe
- Encouragement of a new generation of Europeans who promote common values and European identities

Application for funding

- Not funded in the first round (pilot call) in 2019 with U4Society Network (Ghent, Groningen, Göttingen, Uppsala, Tartu University), due to a geographical imbalance of partner institutions
- Re-application in 2020 with an extended consortium of partner universities
- Funding in the amount of 7,5 million EUR per project (for three years)



Internationalisation

World Humanities Report (WHR)

European Research Team for the World Humanities Report

- Project of the universities Göttingen (coordinator), Utrecht, Bologna, UC London, Belgrade - jointly coordinated by UGOE and U Utrecht
- The Consortium of Humanities Centers and Institutes (CHCI), on behalf of the International Council of Philosophy and the Human Sciences (CIPSH) and in collaboration with UNESCO proposes to undertake a World Humanities Report (WHR)

A tool to better understand and reflect the contributions of the humanities to knowledge and society

Funded with 250,000 € by VW-Foundation



Digitalisation

Campus-Institute Data Science (CIDAS)

Principal aims of the institute established in 2019

- Bringing together ethical, legal, social, political and economic aspects in digitalisation research
- Fostering networking between methodological and applied research

Science policy

- Establishing new professorships
- Aligning vacant positions to our Data Science-Strategy
- Establishing new, additional professorships in the fields of „Data Science“, „Machine Learning“ and „Artificial Intelligence“
- Using external funding to establish further new professorships
- New study programme „Applied Data Science“ (B.Sc.)



Campus Institute Data Science

Societal Aspects of Digitisation

Society Ethical aspects Economy

Applied Data Science and Computer Science

Bioinformatics & biostatistics Digital Health Sensor & measuring technology Applied Computer Sciences in further disciplines (*Land use, Geology, neurosciences...*) Digital markets Digital Humanities Scientific Computing

Foundations of Data Science

Statistics Computer Science Mathematics

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Digitalisation

Establishing new Professorships

New positions

- Digital Image and Object Sciences in the humanities (2019)
- Interorganisational information systems (2019)
- Foundations of Computer Sciences (2019)
- Didactics of Computer Science (2019)
- Computational Statistics (2019)
- Applied Bioinformatics (2019)
- Data Science (2019)
- Data Fusion (2019)

New positions in negotiation

- Artificial Intelligence / Machine Learning
- High Performance Computing
- Computational Mathematics
- Digital Earth Science
- Machine Learning
- System medicine
- Bioinformatics



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Digitalisation

eResearch Alliance (eRA)

On the eResearch Alliance

- Established in 2014 as joint project by GWDG and SUB
- Mentioned as best practice by the Expertenkommission Forschung und Innovation (https://www.e-fi.de/fileadmin/Gutachten_2019/EFI_Report_2019.pdf, S. 95)

Services in data management and data publication

- Persistent Identifier (referencing of publications and data)
- GRO.data (data repository)
- GRO.publications (publication management tool)
- GRO.instruments (organizing and scheduling scientific instrumentation)
- GRO.plan (creating data management plans)



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Digitalisation

Developing academic infrastructure of digitalisation

- **North-German Supercomputing Alliance (HLRN)**
 - Hosted at Konrad-Zuse-Zentrum für Informationstechnik Berlin (ZIB) and at the University of Göttingen
 - Capacities for „supercomputing“ in new data center
 - Cooperation with the German Aerospace Center
- **Institute for Digital Humanities**
 - Founded in 2019 at the University of Göttingen
 - Cooperation platform for digital aspects in researching and teaching humanities



Sustainability

Best practices at the University of Göttingen

- **Research, Teaching & Learning**
 - Wide range of research projects that among other things deal with, e.g.: Climate change, Sustainable land use, Energy and Mobility schemes, Diversity
 - Certificate Programme „Studium Oecologicum“
 - Interdisciplinary programme for all students
 - All courses focus on the topic of ecology and sustainability
 - Series of conferences „Science for Peace and Sustainability“
- **Videos Projects on Sustainability**
- **Innovative Energy Systems**



Sustainability

Best Practice: Geothermal energy for the university campus

- **Geothermal energy for the campus**
 - Near-surface geothermal energy already in use for the cooling system of MPI for Solarsystem research.
- **Research**
 - Seismic investigation of the deep geothermal potential (down to 5,000m) for the general heat supply of the University Campus in Spring 2015.
 - EU-Project „MEET“ (2018-2021): Analysis of the rock strata, transfer from conventional to geothermal energy supply, Decision Making Tool for investors.
 - EU-COST-Action „Geothermal – DHC“ (from Autumn 2019): Cross-linking of researchers and experts to help implement geothermal technologies.





Thank you for your attention!



Enhancing the social impact of the HeKKSaGOn Alliance

Shojiro Nishio, PhD
President, Osaka University

September 12, 2019

From "Network" to "Alliance"
The 6th Presidents Meeting in Osaka



Heidelberg | Kyoto | Karlsruhe | Sendai | Göttingen | Osaka network



Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO

September, 2019 Heidelberg, Germany

1

Raising social impact through HeKKSaGOn

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD



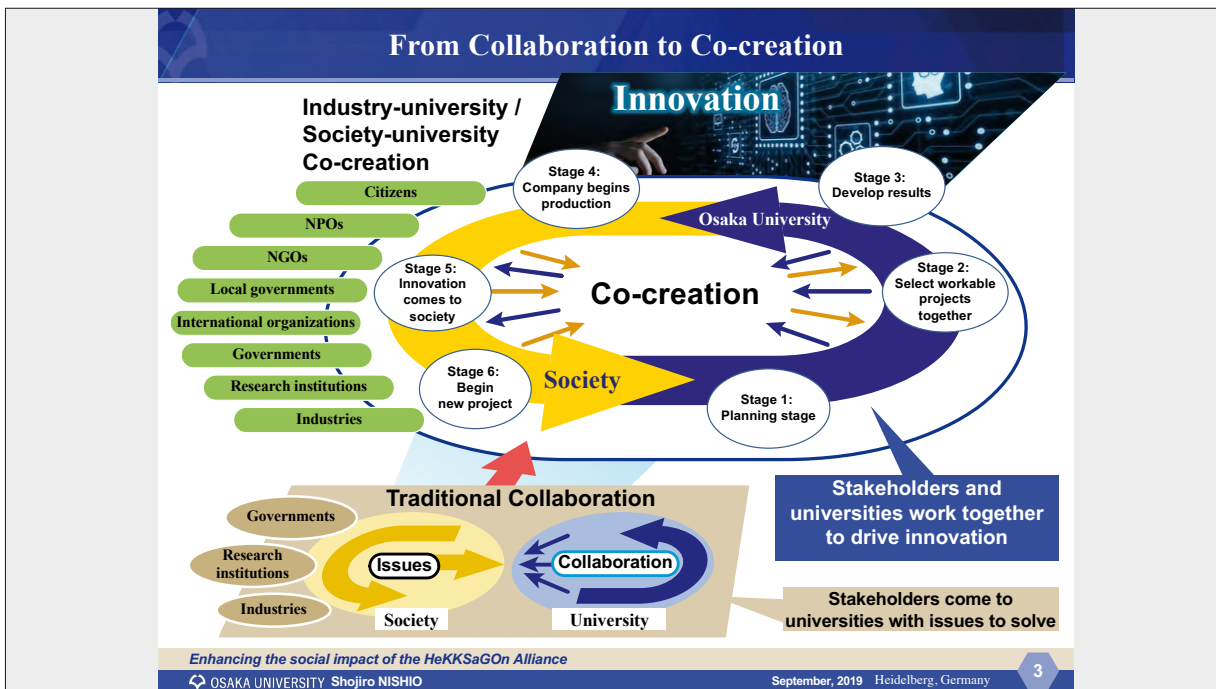
**Bringing HeKKSaGOn to the next level:
From Collaboration to Co-creation**

Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO

September, 2019 Heidelberg, Germany

2



Co-creation Ideas for HeKKSaGOn —for greater social impact—

- #### 1 Potentials and challenges of Big Data

 - E.g. Osaka's 50 hospital network with 10,000 beds
 - Ethical, Legal, Social Issues (ELSI)
- #### 2 Advanced cancer therapy through collaboration in nuclear medicine and related fields

 - Proactively seek and utilize HeKKSaGOn potentials.
 - Strength in basic and applied science, multi-disciplinary inputs, and a proven track record of collaboration.

Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO September, 2019 Heidelberg, Germany 4



Unprecedented Big Data analysis through the Hospital Network



1. Osaka University Hospital's technological base

- Develop new methods of preventive care, individualized medicine, and innovative treatments of serious illnesses through big data analysis.

2. A network of some 50 partner hospitals

- Osaka University Hospital, the Core Clinical Research Hospital of a network with 10,000 beds

Biggest Data of its kind in Japan

Unique data analysis unparalleled in the World

- Create a clinical joint research network to better serve social needs.
- Advance and share diagnostic and preventive methods.
- Develop revolutionary medical treatments and new drugs for clinical applications.

Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO

September, 2019 Heidelberg, Germany

6

ELSI hub to be established by Osaka University for Japan



Needs:

- New technologies, such as AI, require governance that ensures their sustainable and responsible use.
- Identify and respond to **ethical, legal and social issues (ELSI)** in the **early stages** of technological development and social applications.
- Neglect of ELSI, as well as haphazard interventions, a lack of expertise, communication, knowledge sharing, and know-how has led to the stagnation of cutting-edge technology.
- A **comprehensive approach to ELSI**, including inter- and cross-disciplinary research and support mechanisms to **produce guidelines** for new technology.

Establishment of an ELSI research center:

- Comprehensive, cross-disciplinary research on ELSI
- Education and training of ELSI experts and the next generation of students with ELSI literacy
- Platform to **share knowledge** and provide consultations to industry, government, academia, and society in **collaboration with partner universities**.

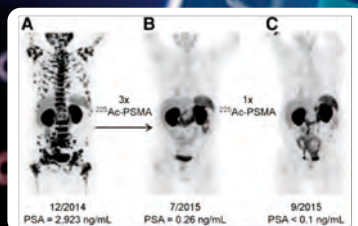
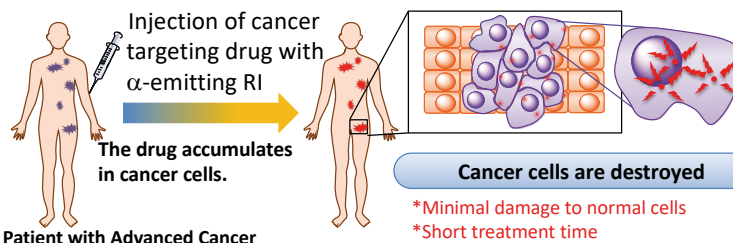
Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO

September, 2019 Heidelberg, Germany

7

Advanced Cancer Therapy: Collaboration in nuclear medicine and related fields of study



Kratochwil et al., J Nucl Med. 2016, 57, 1941-1944.

- ◆ The first clinical trial was conducted at Heidelberg University Hospital.
- ◆ Outstanding curative effect on advanced prostate cancer.
- ◆ Research is ongoing at Osaka University

Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO

September, 2019 Heidelberg, Germany

8

Interdisciplinary inputs necessary for the advancement of Targeted Alpha Therapy (TAT)

Production
Large amount of RI production

Separation
Automatic separation system

Labeling
Targeting tumor

Clinic
Treatment by TAT

Imaging
Advanced cancer

Research Center for Nuclear Physics | **Radioisotope Research Center** | **Schools of Medicine / Schools of Science** | **Hospital**

Compact accelerator | **Radio nucleus separation technology** | **Radioactive materials synthesis technology** | **Certification facility for radioactive medicine**

Targeted Alpha Therapy

Enhancing the social impact of the HeKKSaGOn Alliance

OSAKA UNIVERSITY Shojiro NISHIO | September, 2019 Heidelberg, Germany | 9

Interdisciplinary Nuclear Science Research Collaboration Network

Co-creation

Advanced Cancer Therapy

17 PARTNERSHIPS FOR THE GOALS

9 MINISTRIES, INSTITUTES AND UNIVERSITIES

3 RESEARCH FIELDS: CANCER, HEALTH AND WELL-BEING

Enhancing the social impact of the HeKKSaGOn Alliance

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DEM LEBENDIG

HeKKSaGOn
NETWORK OF UNIVERSITIES

The 7th
German-Japanese University
Presidents' Conference
12th-13th September 2019
Heidelberg University

Logos for partner institutions including RWTH Aachen University, KIT, and others are visible at the bottom of the banner.

EN GEIST



WORKING GROUP (1)
LIFE AND NATURAL SCIENCE FUSION
 NEW UNIVERSITY, FORMER SENATE'S HALL

Chair

Motomu Tanaka

Chair, Institute for Physical Chemistry (Heidelberg) and Professor,
 Institute for Advanced Study (Kyoto), Heidelberg University

List of Participants

Wasim Abuillan

Junior Researcher, Physical Chemistry,
 Heidelberg University

Martin Bastmeyer

Head, Department of Cell and Neurobiology,
 Institute of Zoology, Karlsruhe Institute
 of Technology

Anthony Ho

Emeritus Chair, Internal Medicine,
 Heidelberg University

Thomas Höfer

Director, DKFZ and BIOQUANT,
 Heidelberg University

Thomas Holstein

Chair, Centre for Organismal Studies,
 Heidelberg University

Kenichiro Kamei

Associate Professor, Institute for Advanced
 Study, Kyoto University

Atsushi Mochizuki

Professor, Institute for Frontier Life and
 Medical Sciences, Kyoto University

Florian Rehfeldt

Third Institute of Physics, Biophysics,
 Göttingen University

Yoshifumi Saijo

Professor, Graduate School of Biomedical
 Engineering, Tohoku University

Ulrich Schwarz

Chair, Theoretical Physics and BIOQUANT,
 Heidelberg University

Hiroshi Suito

Professor, Advanced Institute for Materials
 Research, Tohoku University

Karel Svadlenka

Associate Professor, Graduate School of
 Science, Department of Mathematics,
 Kyoto University

Yoshinori Takashima

Professor, Institute for Advanced Co-
 Creation Studies, Osaka University

Fuyuhiko Tamanoi

Programme-Specific Professor Institute for
 Advanced Study, Kyoto University

Tatsuaki Tsuruyama

Kyoto University hospital, Department
 of drug and discovery medicine, Kyoto
 University

Christof Wöll

Director, Institute of Functional Interfaces
 IFG, Karlsruhe Institute of Technology



7th HeKKSaGOn Work Group I Meeting “Life and Natural Science Fusion”

Summary



Chair: Motomu Tanaka (Heidelberg/Kyoto)

Co-Chair: Martin Bastmeyer (KIT)



Past Meetings (Since 2010)

6th Meeting (Osaka)

Chairs: M. Tanaka (Kyoto/Heidelberg)
M. Bastmeyer (KIT)

- Kyoto
S. Takeda (Med), T. Tsuruyama (Med)
K. Svadlenka (Math)
- Karlsruhe
M. Bastmeyer (Bio), C. Woll (Chem)
- Osaka
A. Harada (Chem), Y. Takashima (Chem)
M. Kinoshita (Bioeng), S. Sakai (ChemEng)

Constantly recruiting new faces, and inviting junior faculties and graduate students

A. Yamamoto, M. Nakahata, R. Suzuki
(Junior faculties, HeKKSaGOn graduates)

Our “Spirit”

- (1) We mutually exchange/train PhD students and junior researchers using available funds (e.g. center projects).
- (2) During the past 10 years, a number of spin-off activities have stemmed out of our WG, which, we believe, increased the visibility of HeKKSaGOn and our universities.

Joint Conference on the Institutional Level iCeMS – SFB 873 Symposium (2011)

Heidelberg-Kyoto Joint Symposium 21–23 July 2011

Crossing Boundaries:
Stem Cells, Materials, and Mesoscopic Sciences



A. D. Ho
CRC873
Spokesperson



N. Nakatsuji
iCeMS
Director

Thematic Workshops in Japan & Germany

Japanese-German Mini-Symposium on
"Quantitative Tools for the Analysis of Cancer Microenvironments"
October 24, DKFZ Communication Center (K1) INF 280 9:00 - 15:00
Organizers: M. Tanaka (Heidelberg / Kyoto), J. Sleeman (Heidelberg / KIT)



T. Tsuruyama (Cancer
Biobank Kyoto) visited Inst.
Pathol., Heidelberg.

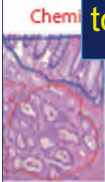


6 x Meetings have been held.

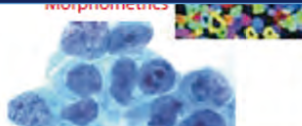
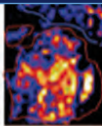
Topics range from Cancer μ -Environments, Hydra Immortality,
to Robotic Manipulation of Cells and Tissues



Statisti



Chem



morphometrics



KIT
Karlsruhe Institute of Technology



M. Bastmeyer (KIT) spent sabbatical at iCeMS & CiMPhy via JSPS invitation fund (2014, 2019)

The 163rd iCeMS
SEMINAR

Fri 4 April 2014
15:00-17:00

Bio-functionalized 2D-surfaces and 3D-scaffolds
to study cell adhesion and axon guidance



The Coordinator, Supporters, and Students



HD & KIT Students
They are now in Kyoto

Japanese Students in HD and KIT



They joined the WG Meeting!



HeKKSaGOn
NETWORK OF UNIVERSITIES

September 12, 2019, Heidelberg

Towards of a New WG

“Science and Technology for Health”

Report



Chair: Motomu Tanaka (Heidelberg/Kyoto)

Co-Chair: Martin Bastmeyer (KIT)



Participants to This Meeting



Natural Evolution towards a New WG



WGX "Science and Technology for Health"

Are we ready?

(1) We have actually colleagues from clinical medicine
(this meeting: pathology, hematology, cardiology).

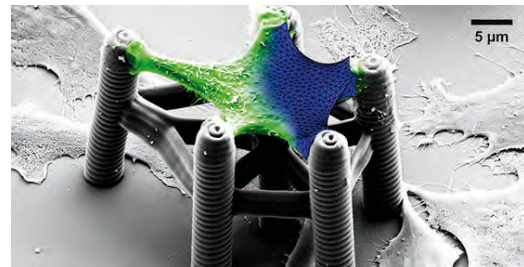
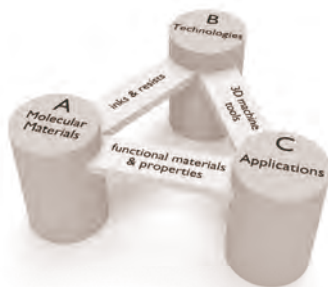
(2) Many of us are dealing with medically relevant problems
(stem cells, organoids, disease models, mathematical modeling of diseases).

Some Thoughts for Future

Excellence Cluster "3D Matter Made to Order"

Coordinators: M. Wegener, U. Bunz

5 x WG members are core PIs



M. Bastmeyer and K. Weißenbruch

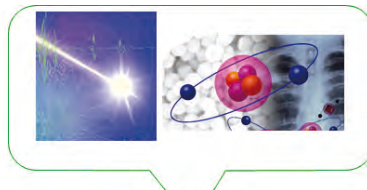


Quantum Nano Medicine Research Center

Convergence of Physics, Nanotechnology and Medicine



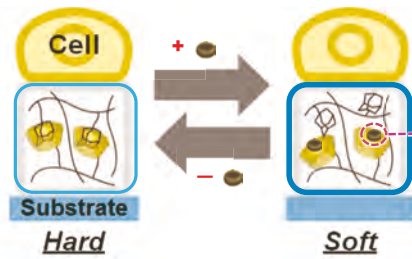
F. Tamanoi



iCeMS/KUIAS/Kyoto Univ.

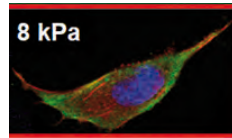
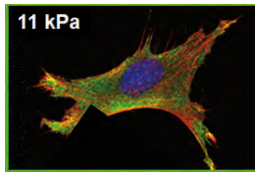
CNSI/UCLA
Dept. of MIMG/UCLA

Supramolecular Materials for Stem Cell Regulation



Y. Takashima

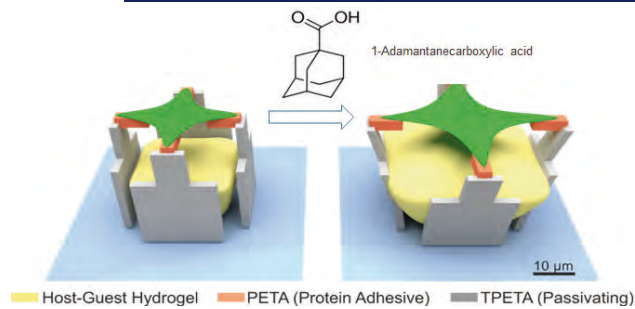
Osaka:
Yoshinori Takashima
Masaki Nakahata



Heidelberg/Kyoto:
Motomu Tanaka



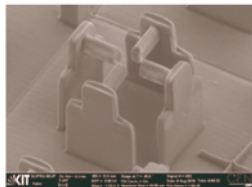
Stimuli-responsive Structures: Supramolecular Materials for 3DMMO



KIT:
Martin Bastmeyer
Martin Wegener



Heidelberg/Kyoto:
Motomu Tanaka



Osaka:
Yoshinori Takashima
Masaki Nakahata



Our Visions for Future

- (1) We will start a new WG "Science and Technology for Health".
- (2) We believe our bottom-up proposal meets the top-down strategy of our universities.
- (3) We hope our universities will further sustain the supports for students and junior researchers from our WG.

WORKING GROUP (2)

COORDINATION CHEMISTRY FOR ENERGY CONVERSION, CATALYSIS AND NANOTECHNOLOGY

NEW UNIVERSITY, LECTURE HALL UGX60

Chair

Rüdiger Klingeler

Professor, Kirchhoff Institute for Physics, Heidelberg University

List of Participants

Markus Enders

Professor, Institute of Inorganic Chemistry,
Heidelberg University

Ganna (Anya) Gryn'ova

Heidelberg Institute for Theoretical Studies
(HITS gGmbH), Heidelberg University

Maurits Haverkort

Professor, Institute for Theoretical Physics,
Heidelberg University

Satoshi Horike

Associate Professor, Institute for Advanced
Study, Kyoto University

Milan Kivala

Professor, Institute of Organic Chemistry,
Heidelberg University

Shigeyuki Masaoka

Professor, Graduate School of Engineering,
Osaka University

Michael Mastalerz

Professor, Institute of Organic Chemistry,
Heidelberg University

Hitoshi Miyasaka

Professor, Institute for Materials Research,
Tohoku University

Annie Powell

Head, Institute of Inorganic Chemistry AOC,
Karlsruhe Institute of Technology

Kazuyuki Sakamoto

Professor, School of Engineering,
Osaka University

Masahiro Yamashita

Professor, Graduate School of Science,
Tohoku University

Workshop:
**Functional Molecules for Energy Conversion,
 Catalysis and Nanotechnology**
 Organized by: R. Klingeler (Uni HD, Physics), M. Enders (Uni HD, Chemistry),
 M. Yamashita (Tohoku Univ., Chemistry)



Coordination Chemistry for Energy Conversion, Catalysis and Nanotechnology (2010-2018)

- Strong activities at each partner institution
- Exchange of people: BSc, MSc, PhD students, PostDocs, PIs (depends on seed funding)
- ~25 collaborative publications

Functional Molecules for Energy Conversion, Catalysis and Nanotechnology (2019)

- Strong activities at each partner institution
- Exchange of people: BSc, MSc, PhD students, PostDocs, PIs (depends on seed funding)
- ~25 collaborative publications
- Extended to physics, materials science, org. chemistry
- Participants: 25 (14 PIs) (~tripled cf. 2016)
- Proposal draft on IRTG DFG-JPSJ Osaka/Heidelberg
Paramagnetic Molecular Materials with Tailored Properties
 physics, i/o chemistry, engineering; Comba, Klingeler/Kubo, Itoh
 DFG allows only 1 partner/country

Functional Molecular Materials

Molecular Materials:

Strong benefits for application but not yet exploited

- Molecular Magnets: data storage
... and natural realisation of spin q-bits
 - Spintronics (low spin-orbit coupling)
 - Molecular-based electronics
 - Artificial photosynthesis
 - Light harvesting
 - Catalysis
 - Organic Batteries
 - Fuel cells
 - MOFs: extremely versatile (>50k)
- Information

Energy

Functional Molecular Materials

What we need = what we have

- Design & Synthesis (Chemistry)
- (sophisticated) Characterisation (Chemistry/Physics)
- Theory (Chemistry/Physics/Materials Science)
- From Molecules to Materials (Chemistry/Physics/Materials Science)
- Applications/Devices (Chemistry/Physics/Materials Science)

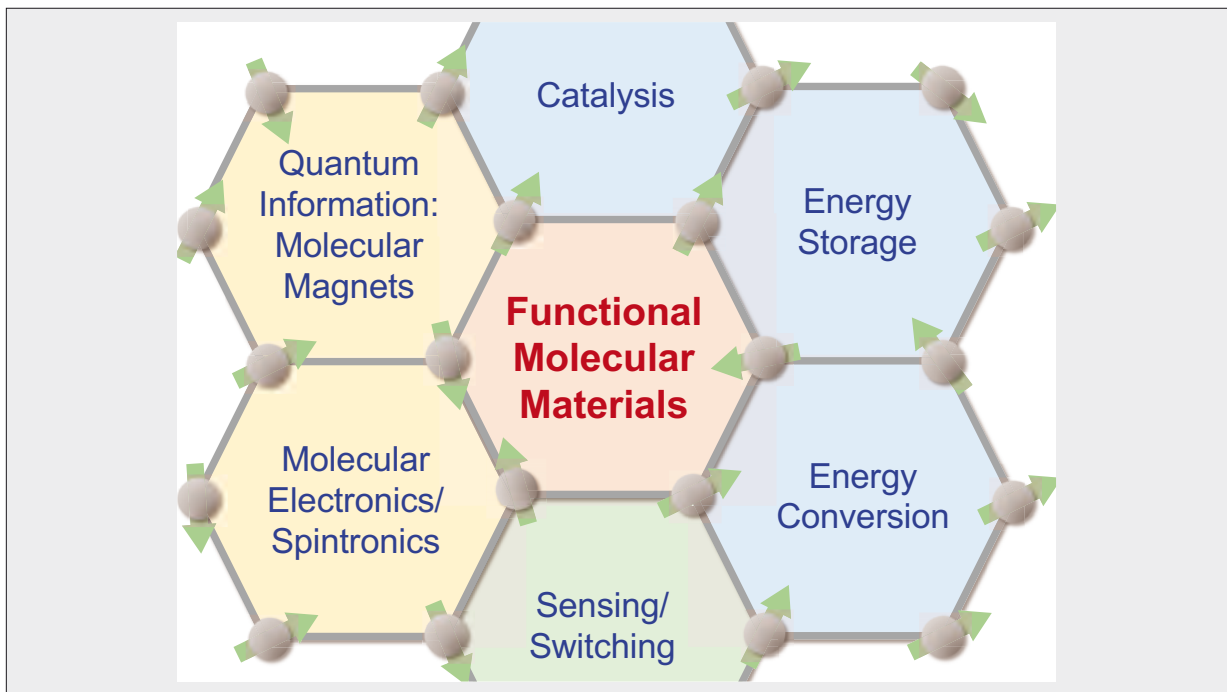
Functional Molecular Materials

Outcome of this meeting: New collaborations

- Mastalerz (HD) & Horike (Ky)
- Ruben (KIT) & Yamashita, Nojiri (Toh)
- Enders (HD) & Nyasaka, Yamashita (Toh)
- Kivala (HD) & Sakamoto (Os)
- Meyer (Göt) & Masaoka (Os)
- Powell (KIT) & Nojiri (Toh)
- Haverkort (HD) & Sakamoto (Os)
- Klingeler (HD) & Miyasaka (Toh)

Requests

- Appropriate DFG/JPSJ funding schemes
- Joint degrees (IRTG graduate schools)
- Seed funding: travelling costs for students



WORKING GROUP (3)
SOCIAL SCIENCES AND HUMANITIES
 NEW UNIVERSITY, LECTURE HALL 12

Chair

Harald Fuess

Professor, Heidelberg Centre for Transcultural Studies, Heidelberg University

List of Participants

Judit Arokay

Institute for Japanese Studies, Heidelberg University

Shuangyue Bao

Doctoral Student, Tohoku University

Kjell Ericson

Assistant Professor, CPIER/Graduate School of Letters, Kyoto University

Ruobing Fang

PhD Student, Chinese Studies, Göttingen University

Sarah Fraser

Professor, Institute of East Asian Art History, Heidelberg University

Tatsushi Fujihara

Associate Professor, Institute for Research in Humanities, Kyoto University

Koto Fukunaga

Master's Student, Graduate School of Letters, Osaka University

Björn-Ole Kamm

Senior Lecturer, Graduate School of Letters, Kyoto University

Hanbark Kim

Graduate students, Graduate School of Letters, Kyoto University

Hans-Martin Krämer

Professor, Institute for Japanese Studies, Heidelberg University

Taku Kuroiwa

Associate Professor, Department of French Language and Literature, Tohoku University

Jaok Kwon-Hein

Cluster of Excellence "Asia and Europe in a Global Context", Heidelberg University

Ja Dai Matsui

Professor, Graduate School of Letters, Osaka University

Takuma Melber

Cluster of Excellence "Asia and Europe in a Global Context", Heidelberg University

Koji Ono

Associate Professor, Graduate School of Arts and Letters, Tohoku University

Inken Prohl

Professor, Institute for Religious Studies, Heidelberg University

Michael Radich

Professor, Heidelberg Centre for Transcultural Studies, Heidelberg University

Marc Arwed Rutke

Coordinator, Erasmus Mundus Programme Euroculture, Göttingen University

Claus Telge

Associate Professor, Graduate School of Letters, Osaka University

Yu Tokunaga

Associate Professor, Institute for Research in Humanities, Kyoto University

Melanie Trede

Professor, Institute of East Asian Art History, Heidelberg University

Ulrich Ufer

Institute for Technology Assessment and Systems Analyses ITAS, Karlsruhe Institute of Technology

Andreas Weis

PhD Student, Chinese Studies, Göttingen University

Takahiro Yamamoto

Cluster of Excellence "Asia and Europe in a Global Context", Heidelberg University

Tepei Yamamoto

PhD Student, Graduate School of Letters, Osaka University

Kotaro Yoshida

Associate Professor, Graduate School of Letters, Osaka University

RECHT.FAKULTÄT
 UNIVERSITÄT
 HEIDELBERG

ASIA AND EUROPE
 IN A GLOBAL CONTEXT
 Shifting Asymmetries in Cultural Flows

Humanities and Social Sciences Working Group 3



Transcultural Encounters

Heidelberg University, September 11-13, 2019
 Harald Fuess

Past Activities: New Structures of Cooperation in Education

M.A. in Transcultural Studies since 2011 (Heidelberg): 165 students from 34 nations; **Joint M.A. Degree** with Kyoto University (quota 20 students), model for **Erasmus Mundus** in Global Markets for Glasgow-Göttingen-Kyoto. Inner-German „Erasmus“ Heidelberg-Göttingen (Asia-Europe) under discussion.

PhD Double Degree Program with Tohoku University (Law/Letters) model for funded **Joint PhD GS** Asia/Transcultural Heidelberg/Ca. Foscari University in Venice.

Visiting Professorships: Toshiba Foundation, DAAD Visiting Professorships and GS International Japanese Studies (20 professors for 3 months in 5 years). Now Yale.

HeKKSaGOn University Internationalization: Japan hiring 6 Heidelberg Postdocs from tenure-track Assistant Professors to tenured Associate Professors

Continuous External Funding Stream in total of about one and a half million euro for mobility measures from Heidelberg to Japanese HeKKSaGOn Humanities units; we just received **two new DAAD grants** for Osaka (ISAP/Arokay) and Kyoto (DD/Fuess) totaling over 400.000 euro, 2019-2023

Current Activities 1: Transcultural Encounters Conference

Graduate Students
 11 Sept 2019

Section on Cultural Studies (Chair: Dr. Nora Bartels/Heidelberg)	
Yu-Hsin CHANG	Identity, Narrative, and Invention: Constructions of the Origin of Taiwanese Literary Modernism
Yoko KAGAMI	Metaphorical meanings of color terms in Japanese and other languages
Teppeï YAMAMOTO	The "Average Man" and German-Language Literature in the 19th and 20th Century.
Section on History and Memory (Chair: Dr. Takuma Melber/Heidelberg)	
Miki MATSUI	The Changing Face of Divinity: Foreign Contact and the Transformation of Worship in Heian Japan
Koto FUKUNAGA	Wie wurde das Stauffenberg-Attentat in den 1950er und -60er Jahren in der Bundeswehr bewertet? Vom Verräter zum Held. (The postwar reevaluation of Stauffenberg's assassination attempt on Adolf Hitler on 20. Juli 1944)
Jianlin ZHANG	Will there be a final apology between Japan and Korea?
Section on China in Global History (Chair: Dr. Takahiro Yamamoto/Heidelberg)	
Shuangyue BAO	Comparative analysis of pig culture: A case from Eastern Inner Mongolia, China and Okinawa, Japan
Andreas Günter WEIS	The Sino-German Dimensions of China's "Third Party" between the early 1920s and the World War II Era
Jia XIE	Shaping the spiritual community -- the aesthetics in Manchukuo under the slogan "Five Races Under One Union"
Section on Multiculturalisms in Society (Chair: Dr Jaok Kwon-Hein/Heidelberg)	
Mhairi MONTGOMERY	Constructing (Trans)locality: Ainu Spaces in Tokyo
Hanbark KIM	Rethinking Legal Pluralism in the Qing Empire: The Case of Exile Punishments
Datong Qiu	Encounters, Cooperation and Competition: Chinese merchants in Hakodate in the late 19th century
Ruobing FANG	Familiar Strangers: the repatriation of Western-educated Chinese, 2010 – 2018

Current Activities 2: Transcultural Encounters Conference

Sept 12, Thursday

Michael RADICH (Heidelberg)	Section on Material Culture
Dai MATSUI	Religious Interactions among the Turkic Ugurs as Seen in the Dunhuang Wall Inscriptions
Koji ONO	Dragon Patterns in Early Modern China and their Dissemination: Clothes, Porcelain and the Gion Festival in Kyoto
Ulrich UFER	Of tea parties and kimonos – Asian contributions to the rising consumer society of the Dutch Golden Age
Melanie TREDE (Heidelberg)	Section on Food and Agriculture
Tatsushi FUJIHARA	Impact of "Food War": Agricultural Policy in Imperial Japan after the First World War
Yu TOKUNAGA	Wartime Food Security and Immigrant Farm Labor: Japanese and Mexicans in the United States during World War II
Takuma MELBER	'Chopsticks' of remembrance: the commemoration of the Japanese occupation period in Singapore
Kjell ERICSON	Hypercultivation: Aquacultural Ecology, Pearl Crisis, and the Politics of Density in Ago Bay, 1950-1970

Sept 13, Friday

Judit AROKAY (Heidelberg)	Section on Mobilities of Ideas and People
Kotaro YOSHIDA	Blind people in the Edo period and Transcultural Alteration of this information
Takahiro YAMAMOTO	From Settler to King? Mori Koben in Truk
Taku KUROIWA	The figure of Roland in modern Japan: Christian warrior or Occidental samurai?
Hans Martin KRÄMER	Mahayana in Europe: Japanese Buddhists and Knowledge about Buddhism in Europe before 1900*
Inken PROHL (Heidelberg)	Section on Contemporary Society
Björn-Ole KAMM	Transcultural Engagements of Live-Action Role-Play
Harald FUESS	Tourist Pollution in Kyoto: Public Discourse and Urban Transformation
Wako ASATO	Migration in Japan: Successes and Failures

Future Activities: Cooperation in Research

Global Asian and Transcultural Studies (GATS) History, Society, and Culture

- 1) **Japan/East Asia in Global History**
Adachi-Akita-Fuess-Fujihara-Sachsenmaier-Ufer
- 2) **Migration, Labor, and Gender in the Economies of Aging**
Asato (Kyoto) & Schwierien (Heidelberg)
- 3) **Religion and Modernity between East and West**
Krämer (Heidelberg) & Klautau (Tohoku)
- 4) **Digital Humanities: Literary Mapping Project**
Arokay (Heidelberg) & Iikura (Osaka)

HEINRICH KALL
UNIVERSITÄT
HEIDELBERG



ASIA AND EUROPE
IN A GLOBAL CONTEXT
Shifting Asymmetries in Cultural Flows

Tohoku University International Japanese Studies



HeKksaGOn Meeting 2021

WORKING GROUP (4)
**DYNAMIC IMAGING FOR PHYSICAL,
CHEMICAL AND BIOLOGICAL INTERESTS**
NEW UNIVERSITY, LECTURE HALL UGX61

Chair

Kiyoshi Ueda

Professor, Institute of Interdisciplinary Research for Advanced Materials, Tohoku University

List of Participants

Lorenz Cederbaum

Senior Professor, Institute for Physical Chemistry, Heidelberg University

Kirill Gokhberg

Group Leader, Institute for Physical Chemistry, Heidelberg University

Kiyoshi Kanie

Professor, IMRAM, Tohoku University

Nikolai Kryzhevoi

Researcher, Institute for Physical Chemistry, Heidelberg University

Alexander Kuleff

Group Leader, Institute for Physical Chemistry, Heidelberg University

Eiichiro Matsubara

Deputy Executive Vice-President for Industry-Government-Academia Collaboration, Graduate School of Engineering, Kyoto University

Akinobu Niozu

PhD student, Department of Physics, Kyoto University

Christian Ott

Group Leader, Max Planck Institute for Nuclear Physics, Heidelberg University

Shinya Takaishi

Associate Professor, Department of Chemistry, Graduate School of Science, Tohoku University

Simone Techert

Helmholtz Professor, IRP and DESY-FS, Göttingen University

Oriol Vendrell

Department Head, Institute for Physical Chemistry, Heidelberg University

Kaoru Yamazaki

Assistant Professor, IMR, Tohoku University

Working Group 4 meeting on

Dynamic imaging for Physical, Chemical, and Biological Interests

Coordinators:

U. Heidelberg
Lorenz Cederbaum

Oriol Vendrell

& Tohoku U.
Kiyoshi Ueda



History and status

This program is based on a long-term collaboration between

- Heidelberg University (Cederbaum/Vendrell's group, Pfeifer's group -MPIK, Schlichting's group-MPIMF)
- Goettingen University (Techert's group-DESY)
- Tohoku University (Ueda's & Kono's groups)
- Kyoto University (Late Yao/ Nagaya's group, Matsubara's group)
- Osaka University (Yamauchi's group, Kodama's group)

and combines rather broad objects:

- (1) Ultrafast electronic and structural dynamics of any form of matter
- (2) Use of advanced light sources (X-ray free electron lasers, low emittance synchrotron radiation facilities, ultrafast femto-atto second lasers) for physical, chemical, and biological studies

Scientific Milestones reached

Due to technical developments at large-scale X-ray facilities, the collaboration is fully blooming:

- Since HeKKSaGOn started we have:
 - published **~40** papers together
 - **2-4** common beamtimes/year at synchrotron or free electron laser facilities (very high international competition).
- Since the last HeKKSaGOn meeting we have:
 - Published **~ 10** papers (incl. some highly indexed publications)
 - carried out **6** joint beamtimes - among them, we had the first "molecular movie" FEL beamtime on molecular wires and hemoglobin.
 - working together on a "molecular movie" project of small molecules, photovoltaic materials, photocatalytic systems, and photoreactive protein, at SACLA and the European XFEL.

Educational Milestones reached / Outsourcing

During the running time of HeKKSaGOn:

- For “beamtime beginners” special training programs have been established during the preparation and the performance of common beamtimes. The advanced researchers helped the “youngsters” leading to a very trustable and enjoyable atmosphere among the colleagues.
- ~ 25 PhD students and postdocs have been trained (2-3/group) in the collaboration network (~ 1/3 female).
- The training set the base for a successful carrier as researcher afterwards (industry/researcher at large scale facilities/academic. 100% success rate).
- Involvement of all XFELs and a few SRs in HeKKSaGOn projects.
- Close collaboration with a few companies.



To enforce and broaden the collaborations we had:

HeKKSaGOn WG4 Pre-Conference Discussion Meeting

“Dynamic Imaging for Physical, Chemical, and Biological Interests”

11th September, Heidelberg University, Mathematikon Building (Im Neuenheimer Feld 205),
Conference Room 5.104

Session 1, Theory, Chair: Oriol Vendrell (Heidelberg U) 9:30-11:00

1. Lorenz S. Cederbaum (Heidelberg U): 30 min talk + 10 min discussion

“Is an efficient energy transfer from vibrations to electronic motion possible?”

2. Kaoru Yamazaki (Tohoku U): 20 + 5

“XFEL induced Coulomb explosion of nanomolecule and its apparition to molecular movie”

3. Sudip Sasmal (Heidelberg U): 20 + 5

“Coupled electron-nuclear quantum dynamics of molecules with the second quantized representation of electrons”

Session 2 XUV-Soft X rays, Chair: Kiyoshi Ueda (Tohoku U) 11:30-13:00

4. Till Jahnke (Frankfurt U): 30 min talk + 10 min discussion

“Multi-coincidence studies employing [European X-ray free-electron laser light](#)”

5. Severin Meister (MPIK & Heidelberg U): 20 + 5

“Recent results from the [FLASH-REMI](#)”

6. Thomas Ding (MPIK & Heidelberg U): 20 + 5

“Transient absorption spectroscopy of neon at [FLASH](#)”

To enforce and broaden the collaborations we had:

HeKKSaGOn WG4 Pre-Conference Discussion Meeting

“Dynamic Imaging for Physical, Chemical, and Biological Interests”

11th September, Heidelberg University, Mathematikon Building (Im Neuenheimer Feld 205),
Conference Room 5.104

Session 3, Hard X-rays, Chair: Simone Techert (Göttingen U/DESY) 14:30-16:00

7. Jose Velazquez-Garcia (Göttingen U/DESY/SFB1073): 20 + 5

"Real-time x-ray crystallographic investigations of photo-switchable defected iron (II) grid spin crossover complexes"

8. Alexander Gorel (MPIMF & Heidelberg U): 20 + 5

"Diffusion map clustering of fluctuation SAXS data"

9. Akinobu Niozu (Kyoto U): 20 + 5

"Crystalline defects in single nanoparticles probed by single-shot X-ray diffraction (SACLA)"

Session 4, Novel techniques, Chair: Christian Ott (Heidelberg U/MPIK) 16:30-18:10

10. Daehyun You (Tohoku U.): 20 + 5

"Attosecond delays in photoionization studied with coherent-controlled FEL at FERMI"

11. Marie Grünbein (MPIMF & Heidelberg U): 20 + 5

"Effect of XFEL-induced pressure jumps on protein crystals in liquid jets"

12. Nikolay Golubev (EPFL): 20 + 5

"Modelling of laser-induced ICD-cascades in atomic clusters"

13. Kaja Schubert (Göttingen U/DESY/SFB755): 20 + 5

"SIMS of gas-phase biochemical molecules"

To enforce and broaden the collaborations we had:

HeKKSaGOn WG4 Meeting

“Dynamic Imaging for Physical, Chemical, and Biological Interests”

12th & 13th September, Heidelberg University

Thursday 12th (14:30-17:00)

Kiyoshi Ueda (Tohoku U) Opening (5 min)

1. Oriol Vandrell (Heidelberg U): 25min talk + 5 min discussion

"Structural Dynamics of Protonated [Water](#) Clusters"

2. Christian Ott (Heidelberg U/MPIK): 25 + 5

"XUV-induced two-electron strong-coupling dynamics in [helium](#)"

3. Kiyoshi Kanie (Tohoku U): 25 + 5

"[Next generation 3GeV synchrotron radiation facility](#) project in Japan"

4. Ei-ichiro Matzubara (Kyoto U): 25 + 5

"In-situ imaging of LIB reactions at the positive [electrode/solid electrolyte interface](#) by 2D HXPES"

Friday 13th (9:00-12:30)

5. Simone Techert (Goettingen U/DESY): 25 + 5

"Time-resolved X-ray Studies of High-Performance [Organic Solar Cells](#)"

6. Shinya Takaishi (Tohoku U): 25 + 5

"Exploration of new electronic state in [Halogen-Bridged Metal complexes](#) (MX-chains)"

7. Norimasa Ozaki (Osaka U): 25+5

"Studies on [matter in extreme conditions](#) at Osaka University"

Discussion (on future) and making summary report (~2 hours)

Future Strategy on HeKKSaGOn-WG4

“Dynamic Imaging for Physical, Chemical, and Biological interests”

Since this subject is very broad and of high actuality, even more today than at beginning of our collaboration, we would like keep it also for the next round.

We have discussed ongoing and extended collaborations and how to proceed in future.

We propose the following:

- ① Maintaining and extending close collaborations with world-leading light sources and their academic staffs.
- ② Bridging fundamental science and applications.
- ③ Promoting close collaborations with companies.

Future Strategy on HeKKSaGOn-WG4

“Dynamic Imaging for Physical, Chemical, and Biological interests”

- ④ Continuation of successful series of joint beamtime proposals at synchrotron and FEL facilities:

- (i) ultrafast energy and electron transfer
- (ii) structural biology
- (iii) visualizing chemical / biochemical reactions

Request:

Encourage the exchange of young researchers within HeKKSaGOn.

Next Generation 3GeV Synchrotron Radiation Facility Project in Japan

Aobayama Campus, Tohoku University



SR Facility will be available after 2023 winter.

11

WORKING GROUP (5)

ROBOTICS: CHALLENGES AND OPPORTUNITIES IN THE 21ST CENTURY

NEW UNIVERSITY, LECTURE HALL 04A

Chair

Katja Mombaur

Professor, Institute of Computer Engineering, Heidelberg University

List of Participants

Shinya Aoi

Lecturer, Department of Aeronautics and Astronautics, Kyoto University

Tamim Asfour

Head, Institute for Anthropomatics and Robotics IAR, Karlsruhe Institute of Technology

Rüdiger Dillmann

Institute for Anthropomatics and Robotics IAR, Karlsruhe Institute of Technology

Takahiro Endo

Mechanical Engineering and Science, Kyoto University

Yasuhisa Hirata

Professor, Department of Robotics, Tohoku University

Kazuhiro Kosuge

Distinguished Professor, Tohoku University

Tomas Kulvicius

Research Assistant, Third Institute of Physics - Biophysics, Göttingen University

Lorenzo Masia

Professor, Institute of Computer Engineering, Heidelberg University

Franziska Mathis-Ullrich

Assistant Professor, Institute for Anthropomatics and Robotics IAR, Karlsruhe Institute of Technology

Fumitoshi Matsuno

Department of Mechanical Engineering and Science, Kyoto University

Jan Stallkamp

Head, Fraunhofer Institute for Manufacturing Engineering and Automation, Heidelberg University

Florentin Wörgötter

Department for Computational Neuroscience, Göttingen University

Kazuya Yoshida

Professor, Aerospace Engineering, Tohoku University

Hekksagon Robotics Working Group

Katja Mombaur

Shinya Aoi, Tamim Asfour, Rüdiger Dillmann, Takahiro Endo,
Yasuhisa Hirata, Kazuhiro Kosuge, Tomas Kulvicius, Lorenzo
Masia, Franziska Mathis-Ulrich, Fumitoshi Matsuno, Jan Stalkamp,
Satoshi Tadokoru, Florentin Wörgötter, Kazuya Yoshida



Workshop Robotics & AI

Wednesday, Sept 11, 2019

Marsiliuskolleg Heidelberg





Goal of the workshop



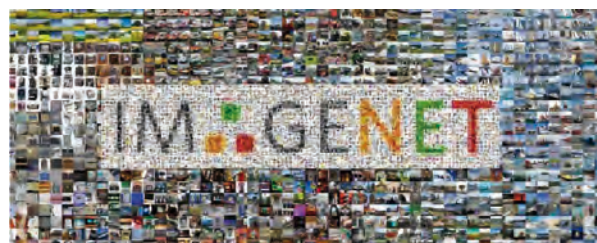
- discuss synergies between current AI trends and robotics research
- highlight the challenges regarding the special needs of robotics
- discuss transferability of promising AI solutions to robotics to create robots with motion intelligence



Today's AI



- **Superhuman performance** in computer vision and speech, medicine diagnosis and games
- **Nothing fundamentally new:** Progress due to large amount of data, advanced computing architectures, machine learning (Deep Learning), new hardware (sensors, computers, few robots), which allow the collection and processing of data



Today's AI



- A recent discussion with representatives from industry has shown that industry is increasingly troubled about modern AI due to:
 1. Lack of proven robustness
 2. Lack in standardization
 3. Lack of transparency for the developer/user.
- Basic Science and Applied Science needs to urgently move away from the still-existing Gold-Rush Mentality and arrive at much more rigorous attitudes w.r.t. modern AI.

Solutions of today's AI...



- are not transferable between different domains
- do not contribute to an understanding of the real world, i.e. they are not explainable and reproducible
- do not exploit basic laws of nature
- are not able able to take interactions with the real world into account which is crucial in robotics

Robots have to interact with humans
RoboDANTE (Robot DANce TEacher)



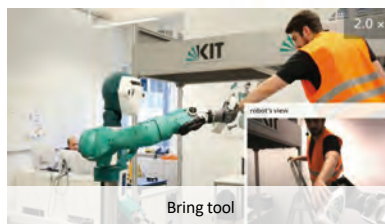
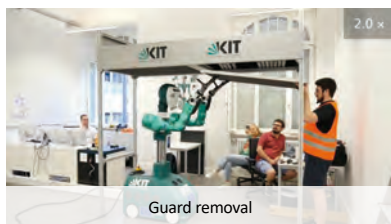
Dance Teaching Robot

Video: # 4

ダンス ティーチング ロボット

ビデオ : # 4

Robots have to learn to collaborate with humans



Robots have to understand the need of help, predict human actions and provide help in a pro-active way

Robots have to assist humans and predict consequences of actions



Robots have to support human movement

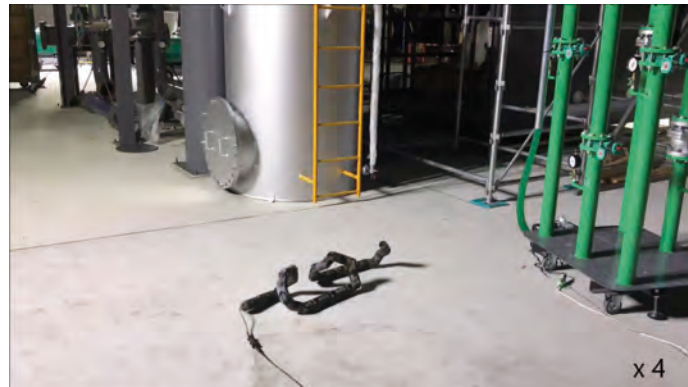


Robots have to explore unknown environments



Collaboration of heterogenous robot teams required

Robots have to intelligently interact with the environment



ROBOTICS AI



- From data science to motion intelligence and autonomy
- ROBOTICS AI emphasizes
 - the **interaction** between cognitive abilities and intelligent bodies
 - **perception-action coupling** for intelligent behavior
- Robotics is a key science and technology to make progress in understanding AI and developing embodied AI
- Robotics will be crucial to address many of the current societal challenges

The World in 2030: Nine Megatrends to Watch



Andrew S. Winston • May 07, 2019 • Reading Time: 8 min

MIT Sloan
Management Review

Key research and development questions in ROBOTICS AI



- **Engineering** robot systems for **real world** applications
 - Development of complete systems (hardware + software!)
 - Safe, secure, trustworthy
- **Robot learning** in **real world** applications
 - Interactive, incremental, lifelong
- **Human-Robot interaction and collaboration** in **real world** applications
 - Physical, multimodal
- **Acceptance and technology assessment**
 - Social, ethical, legal aspects

Needs



- Sustainable research infrastructure for ROBOTICS AI
- Transdisciplinary, multi-national research initiatives on ROBOTICS AI
- **Funding schemes have to put more focus on ROBOTICS AI**

Planned Collaborations & Past Activities



Activities in the last 18 months

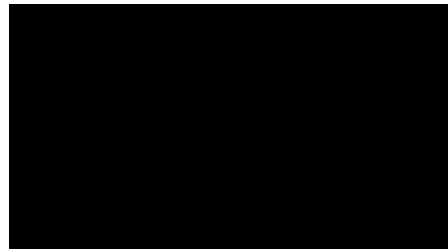
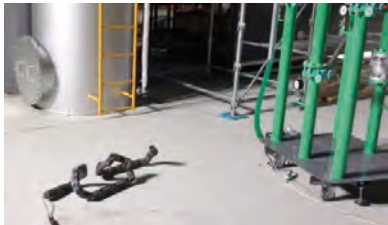
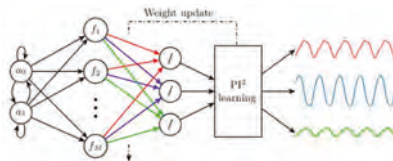


- Tohoku University Engineering Summer Program on Robotics
 - Participation from KIT in the last 3 years
 - Participation from Göttingen
- Undergraduate student from KIT at Kyoto University
- Meeting at ICRA, May 2019, Montreal, Canada
- SWARM conference 2019 (Organizer: Kyoto Uni; PC: from all other universities)
- Workshop "Robotics and AI", Sep 11, Heidelberg

Planned collaborations CPG-based controller for legged robots Adaptive motion generation for robot locomotion



- Aoi, Kyoto U
- Wörgötter & Kulvicius, Göttingen



Planned collaboration Robots to assist mobility of the elderly



- Yasuhisa Hirata, Yueh-Hsuan Weng ,Tohoku U
- Katja Mombaur, Heidelberg



- Ethically Aligned Design for Assistive Robotics with AI
- A Comparative Analysis among Asia, EU and Americas for Acceptance of Robot, Privacy Data Protection issues, etc.
- Design and control of mobility assistance devices
- Exchange of PhD students

Planned collaboration AI for Assistive and Rehabilitation Technology



Partners:
Yasuhisa Hirata (Tohoku University)
Takahiro Endo (University of Kyoto)
Lorenzo Masia (Heidelberg University)



Machine Learning in Biomechanism and Rehabilitation

Identification of robotics metrics for predicting outcome in stroke patients

A Deep Learning Framework for Assessing Physical Rehabilitation Exercises

Further planned collaborations



- Tohoku & KIT "Semantic scene understanding for Robots in harsh environments (space, contaminated)" (Yoshida, Asfour)
- Kyoto & KIT "Understanding human haptic exploration and skill transfer to robotics" (Endo, Asfour)
- Kyoto, KIT & Heidelberg "Synergy based Analysis of Whole-Body Motion" (Aoi, Asfour, Mombaur)
- Osaka & KIT "Data-driven Approaches to Bimanual Humanoid Manipulation" (Harada, Asfour)

A structured scholarship program for extended PhD and Postdoc exchange within Hekksagon would be very much appreciated



Thank you very much for your attention

WORKING GROUP (6)
**MATHEMATICS IN LIFE SCIENCES,
 MATERIALS SCIENCE AND ECONOMY**
 NEW UNIVERSITY, LECTURE HALL 03

Chair

Wilderich Tuschmann

Professor, Institute of Algebra and Geometry IAG, Research Group Differential Geometry, Karlsruhe Institute of Technology

List of Participants

Benjamin Eltzner

Institute for Mathematical Stochastics,
Göttingen University

Fernando Galaz Garcia

Principal Investigator, Institute of Algebra
and Geometry IAG, Karlsruhe Institute of
Technology

Ryushi Goto

Professor, Graduate School of Science,
Osaka University

Shohei HONDA

Professor, Mathematical Institute, Tohoku
University

Stephan Huckemann

Institute for Mathematical Stochastics,
Göttingen University

Hisashi Kasuya

Associate Professor, Graduate School of
Science, Osaka University

Tsuyoshi Kato

Department of Mathematics, Kyoto
University

Kaori Nagato-Plum

Institute of Algebra and Geometry IAG,
Karlsruhe Institute of Technology

Takashi Nakazawa

Associate Professor, Center for Mathemat-
ical Modelling and Data Science(MMDS),
Osaka University

Andrew Sanders

Institute of Mathematics, Differential Geom-
etry Research Group, Heidelberg University

Takashi Shioya

Professor, Mathematical Institute,
Tohoku University

Satoshi Tsujimoto

Department of Applied Mathematics
and Physics, Kyoto University

Frits Veerman

Humboldt Research Fellow in the research
group Applied Analysis and Modelling in
Biosciences, Heidelberg University

Katsutoshi Yamanoi

Professor, Graduate School of Science,
Osaka University

The HeKKSaGOn Mathematics Workgroup

HeKKSaGOn 7th German–Japanese University Presidents' Conference · Heidelberg University
Prof. Dr. Wilderich Tuschmann | 13.9.2019

KIT · INSTITUT FÜR ALGEBRA UND GEOMETRIE



KIT – The Research University in the Helmholtz Association

www.kit.edu

New Research Directions to Focus On

- Geometry and Statistics.
- Analysis and Modelling.
- Mathematical Challenges from Robotics.

Thank you!

ありがとうございます

Danke!

The HeKKSaGOn Mathematics Group

Mathematics at the Interface of Science and Technology

Overall Objective

Mathematics has a long history of providing the common language and the appropriate intellectual frame for other disciplines. In this classical scheme, mathematical new breakthroughs do not a priori affect other sectors of society, except in a longer perspective. However, in the last decades an additional and new paradigm has also emerged. Indeed, modern human societies do nowadays encounter many urgent technology-based problems which have become more and more complicated and harder to handle. Complexity phenomena arising in, e.g., artificial intelligence, big data and robotics, are now often beyond the efficiency zone of the existing tools. In this new context, Mathematics can take direct action. The objective of our work group is to promote cooperative research activities among the six universities in corresponding custom-made applications of mathematics as well as in advancing the frontiers of pure mathematics by balancing seeds in mathematics and needs outside mathematics. This is based on the insight that to attack new real world problems we need new mathematical concepts and methods, and that new applications of mathematics will in turn also stimulate the development of new mathematical theories.

Individual objectives and expected outcomes

1. Geometry and Statistics

Doing geometry on high-dimensional differential and more general spaces constitutes one of the most research-intensive areas of mathematics in recent decades. It has a long tradition that traces its development back well over a century. Its current prominence stems from its position at the crossroads of many active fields such as: algebraic, complex, Riemannian and symplectic geometry, topology, metric geometry, analysis, geometric control and modeling, partial differential equations, Lie theory, and, most recently, probability and statistics.

Its influence spreads well beyond the confines of mathematics to strongly interact with theoretical physics and extends to a multitude of practical applications as diverse as engineering, robotics, medical imaging, computer vision and pattern recognition.

Especially in statistical applications, central limit theorems are a main tool for studying inference phenomena, and rates and distributions of central limit theorems may be heavily influenced by topological and geometric invariants of the underlying spaces.

Indeed, recent and current work shows that non-Gaussian limiting theorems may occur and have impact on many situations and that such effects may even increase with dimension. In consequence, if one uses the wrong limiting distribution and rate, confidence statements are wrong. The recent financial crisis may actually serve here as a quite drastic example where, among others, inadequate Gaussian models led to too light-tailed distributions, falsely neglecting extremal events.

Another challenging topic, which is closely related to the above, is equally not only of high theoretical interest in itself but also shows great potential for applications, consists of the general problem of reconstructing and approximating singular spaces like Alexandrov spaces, point data, varieties, metric measurement configurations etc. by more regular or even smooth ones. Here general recognition tools as well approximation theorems in terms of suitable convergence theories for, e.g., Gromov-Hausdorff, Gromov-Wasserstein and intrinsic current convergence will have to be developed.

As one main and general goal of the future work of the HeKKSsaGon mathematics working group, we thus want to develop and explore limiting and approximation theorems on very general spaces carrying a geometric structure. This goal splits into two subgoals: First to model and validate a new theory for non-Euclidean central limit theorems on manifolds and more general spaces. The second, and equally important subgoal, will be to attack the general approximation and reconstruction problem. To achieve these aims along with its more specific as well as different aspects and ramifications, we will have to rely on as well as combine the expertise of all members involved so far. This has already been very successful in problems arising from fingerprint analysis. In addition, we also expect new interdisciplinary interactions and collaborations with other working groups, especially in robotics.

2. Analysis

The Navier-Stokes equations describe the motion of fluids. The behavior and properties of solutions to the Navier-Stokes equations are useful in many practical applications, for instance, in weather forecast, aircraft manufacturing, atmospheric pollution, and so on. However, even the fundamental mathematical question on existence and uniqueness of global solutions to the Navier-Stokes equations for arbitrary initial data is still open. Indeed, the Clay Mathematics Institute proposed the problem entitled “Navier-Stokes existence and smoothness” as one of the seven Millennium Prize problems in Mathematics. We will contribute to this goal, concentrating on proving smoothness of the solution of the Navier-Stokes equations by using the method of the maximal regularity theorem.

3. Mathematical Challenges in Robotics

There are manifold current research topics in robotics where mathematical tools, especially ones from geometry, can be successfully applied., e.g., in issues in machine learning for robotics, safe human-robot collaboration, motion planning and control for robots as well as medical robotics. Indeed, at KIT there have already been many joint interactions between researchers in medical robotics and geometry, among them Ledermann, Pauer, Tuschmann, Woern, and others, leading to several joint publications in the field of shape sensing and sensorics.

Concrete perspectives and plans for future collaborations

1. Geometry and Statistics

In the spirit of our objectives in geometry and statistics, members of the Geometry Groups at KIT and the Statistics Groups at Göttingen (Eltzner, Galaz-Garcia, Huckemann, Tuschmann) have recently obtained in joint work a Central Limit Theorem for closed Riemannian manifolds, clarifying along the way the geometric meaning of some of the hypotheses in Bhattacharya and Lin's Omnibus Central Limit Theorem for Fréchet means. We obtain our CLT assuming certain stability hypothesis for the cut locus, which always holds when the manifold is compact but may not be satisfied in the non-compact case. Moreover, members from Göttingen around Prof. Huckemann and Prof. Oshika (formerly at Osaka) have successfully collaborated and published on issues centering around fingerprint analysis.

These results should be extendable to a way more abstract setting, namely, to Alexandrov and metric measure spaces, where especially geometers like Prof. Yamaguchi and Prof. Kato, both at Kyoto, and Prof. Shioya and collaborators at Tohoku, could contribute with their expertise.

2. Analysis

The maximal regularity theorem has been developed for these three decades. Karlsruhe Institute of Technology (KIT) has been one of the centers for research on the maximal regularity theorem. Especially, Prof. Lutz Weis (KIT, Prof. Emeritus) and Prof. Kunstmann (KIT) are well known at the world wide level. In fact, they made essential contributions to the maximal regularity theorem and their results have been applied to the method of solvability of nonlinear partial differential equations describing various phenomena in physics, engineering, other sciences and technologies. Prof. Kozono (Tohoku) and Prof. Shimizu (Kyoto) who are specialists of the Navier-Stokes equations have a research plan jointly with Kunstmann. They will

study analyticity of solutions to the Navier-Stokes equations and that of the quasi-geostrophic flow through the method of the parameter trick which is based on the maximal regularity theorem.

3. Mathematical Challenges in Robotics

Beyond the existing joint projects between some of the KIT geometry and robotics groups, we strive to enlarge collaborations, especially with members from other HeKKSaGOn universities and attack new interdisciplinary problems. A very promising topic here is now the joint study of medical robots, gaining interest in the field of healthcare due to their manifold advantages, such as enabling minimally-invasive surgical procedures with high precision, reduced tremor, and direct feedback from various sensors to the surgeon, all of which being researched upon by the group of Prof. Franziska Mathis-Ullrich at KIT and leading to many interesting problems in geometry.. However, we also seek for collaborations in other fields like, e.g., humanoid robotics, that will inspire new mathematics.

However, there is even more to say here. We actually think that this topic is an especially suitable and important one to explore inside the realms of HeKKSaGOn. Indeed, nowadays both Germany and Japan are confronted with an aging and already overaged society. But our countries do also play leading roles in both mathematics and robotics, and mathematically enhanced progress in robotics can and will thus also be directly beneficial to our nations.

Present Members of the HeKKSaGOn Mathematics Group

Prof. Dr. Wilderich Tuschmann, KIT (Chair)
Prof. Dr. Senjo Shimizu, Kyoto University (Co-Chair)
Prof. Dr. Anna Marciniak-Czochra, Heidelberg University
Prof. Dr. Anna Wienhard, Heidelberg University
Dr. Rafael Dahmen, KIT
PD Dr. Fernando Galaz-Garcia, KIT
PD Dr. Peer Kunstmann, KIT
Dr. Kaori Nagatou, KIT
Prof. Dr. Tsuyoshi Kato, Kyoto University
Prof. Dr. Satoshi Tsujimoto, Kyoto University
Prof. Dr. Takao Yamaguchi, Kyoto University
Prof. Dr. Shouhei Honda, Tohoku University
Prof. Dr. Hideo Kozono, Tohoku University
Prof. Dr. Takashi Shioya, Tohoku University
Prof. Dr. Hiroshi Suito, Tohoku University
Dr. Benjamin Etzel, University of Göttingen
Dr. Carsten Gottschlich, University of Göttingen
Prof. Dr. Stephan Huckemann, University of Göttingen
Prof. Dr. Ryushi Goto, Osaka University
Prof. Dr. Hisashi Kasuya, Osaka University
Dr. Yoshihisa Miyanishi, Osaka University
Prof. Dr. Takashi Nakazawa, Osaka University
Prof. Dr. Katsutoshi Yamanoi, Osaka University

Achievements in the first round

Published work involving authors from different HeKKSaGON universities

1. A. Marciniak-Czochra, M. Nakayama, I. Takagi, "Pattern formation in a diffusion-ODE model with hysteresis", *Differential Integral Equations* 28 (2015), 655-694.
2. S. Härtling, A. Marciniak-Czochra and I. Takagi, "Stable patterns with jump discontinuity in systems with Turing instability and hysteresis", *Discrete Continuous Dynamical Systems Ser. A*, 38 (2017), 757-800.
3. Imdahl, C., Gottschlich, C., Huckemann, S., Ohshika, K., "Möbius moduli for fingerprint orientation fields" *J. Math. Imaging Vision* 60 (2018), 651-660.
4. Benjamin Eltzner, Fernando Galaz-Garcia, Stephan F. Huckemann, Wilderich Tuschmann, "Stability of the Cut Locus and a Central Limit Theorem for Fréchet Means of Riemannian Manifolds", Preprint, 2019, arXiv:1909.00410 [math.DG]

Published KIT work at the interface of mathematics and robotics

1. H. Pauer, Chr. Ledermann, W. Tuschmann, H. Woern, "Non-Linear Compensation of Production Inaccuracies and Material Drift by Adjusting the Sensor Data Fusion Algorithms for Shape Sensing Based on FBG-Optical Fibers". In: *Proceedings of the 2014 IEEE Ninth International Conference on Multisensor Fusion and Information Integration (MFI)* (2014)
2. H. Pauer, Chr. Ledermann, W. Tuschmann, H. Woern, "Consistent Quality Evaluation Method for Shape Sensors based on FB Optical Fibers Used in Minimally Invasive Surgery." In: *Proceedings of the 17. ITG / GMA Fachtagung Sensoren und Messsysteme*, Editor VDE Verlag Berlin - Offenbach (2014)
3. H. Pauer, H. Kenngott, Chr. Ledermann, W. Tuschmann, H. Woern, "Analyse der Anforderungen an Formsensoren zur Verwendung in der minimal-invasiven Chirurgie." In: *Tagungsband der 13. Jahrestagung der Deutschen Gesellschaft für Computer- und Roboterassistierte Chirurgie (CURAC)* (2014)
4. H. Pauer, Chr. Ledermann, J. Raczkowsky, W. Tuschmann, H. Woern, "Shape Sensing Based on FBG-Technology - Extension of the Application Possibilities Due to Innovative Sensor-Configurations." In: *Navigation and Actuation of Flexible Instruments in Medical Applications (NAFIMA) Workshop Proceedings - IROS2015* (2015)

5. H. Pauer, Chr. Ledermann, W. Tuschmann, H. Woern, "Pseudo-Data Generation Software for FBG-Optical Fiber Based Shape Sensing." In: Proceedings - SENSOR 2015 (AMA Conferences), ISBN 978-3-9813484-8-4 (2015)
6. H. Pauer, W. Tuschmann, L. Vojkovic, H. Woern, "Validation of a Pseudo-Data-Generation-Software for FBG-Optical Fiber Based Shape Sensing." In: Proceedings Innovation Messtechnik 2015, ISBN 978-3-8440-3560-5 (2015)
7. H. Pauer, D. Teber, W. Tuschmann, H. Woern, "Fiber-Bragg Gitter basierte Formsensoren in der Ureterorenoskopie - Konstruktion und Test eines Ausföhrungskonzeptes." In: Tagungsband der 15. Jahrestagung der Deutschen Gesellschaft für Computer- und Roboterassistierte Chirurgie (CURAC) (2016)
8. H. Pauer, M. Rosenberger, M. Girschikofsky, R. Hellmann, W. Tuschmann, H. Woern, "Towards 1-Component Bragg-Grating Based Shape Sensing. In: 19th International Conference on Information Fusion Heidelberg, Germany - July 5-8, 2016 (2016)

Conferences, Symposia, Workshops and Seasonal Schools

1. 6th German-Japanese University Presidents' Conference, Working Group Meeting, April 12-13, 2018, Osaka.
2. HeKKSaGOn Mini-Workshop 'Geometry meets Stochastics: Smeariness and Pattern Recognition', December 12-13, 2017, KIT.
3. HeKKSaGOn Working Group Winter School in Osaka 2017, March 2-12, 2017, Osaka University.
4. HeKKSaGOn Mini-Workshop 'Perspectives and Challenges in Mathematical Sciences', October 1, 2016, KIT.
5. 5th Japanese-German University Presidents' Conference, Working Group Meeting, September 29-30, 2016, KIT.
6. HeKKSaGOn Mini-Workshop 'Frontiers in Mathematical Sciences', April 18, 2015, Tohoku University, Sendai.
7. 4th Presidential Conference HeKKSaGOn, Working Group Meeting, April 2015, Tohoku University, Sendai.
8. Summer School 'Inference of Pattern Formation: Applications in Natural and Materials Sciences', September 15-19, 2014, Göttingen.
9. Mini-Workshop on Approaches from Discrete Mathematics, PDEs and Stochastics to Pattern Recognition, September 14, 2013, Göttingen.
10. HeKKSaGOn Summer School on Crossing Borders: Unraveling Principles of Life with Quantitative Tools, September 17-26, 2012, Heidelberg.
11. Turing Symposium on Morphogenesis, Mathematical Approaches Sixty Years after Alan Turing, August 27-31, 2012, Sendai.
12. Workshop on Mathematical Models of Biological Phenomena and their Analysis, November 21-24, 2011, Sendai.

For further information and details about our activities please consult our

Group Website: <http://www.hekksagon.net/165.php>

WORKING GROUP (7)
DATA SCIENCE
NEW UNIVERSITY, DISPOSAL ROOM “ORGEL”

Chairs**Takaaki Aoki**

Associate Professor, Institute for Information Management and Communication,
Kyoto University

Sven Bingert

Gesellschaft für wissenschaftliche Datenverarbeitung Göttingen (GWDG),
Göttingen University

Vincent Heuveline

Director, University Computing Centre, Heidelberg University

List of Participants**Martin Baumann**

Academic Staff, University Computing
Centre, Heidelberg University

Erik Bründermann

Head, Department of Accelerator Research
and Development and Operations, Karlsruhe
Institute of Technology

Hiroaki Kobayashi

Professor, Graduate School of Information
Sciences, Tohoku University

Philipp Lösel

Engineering Mathematics and Computing
Lab (EMCL), Interdisciplinary Center for
Scientific Computing (IWR), Heidelberg
University

Oliver Mattes

Academic Staff, University Computing
Centre, Heidelberg University

Chifumi Nishioka

Assistant Professor, Kyoto University
Library, Kyoto University

Takao Onoye

Executive Vice President, Osaka University

Sabine Richling

Academic Staff, University Computing
Centre, Heidelberg University

Sven Siebler

Academic Staff, University Computing
Centre, Heidelberg University

Chen Song

PhD Student, Engineering Mathematics and
Computing Lab, Heidelberg University

Rainer Stotzka

Group Leader, Data Exploitation Methods,
Steinbuch Center for Computing SCC,
Karlsruhe Institute of Technology



Working Group (7) – “Data Science”

7th Japanese – German

University Presidents' Conference

September 12-13, 2019 Heidelberg University



Discussion (12th September, PM)

Status Updates and Knowledge Sharing of Hot Topics

- Data Science WG Wiki (<http://heksagon-data-science.wiki.gwdg.de>)
- Data Science Education
 - Enrollment of industry people (continuing professional education)
 - E-learning contents
 - Experiments based on real common data
- Research Data Management (Policy/Plan, System, Promotion)
- Library Collection Database



Workshop Meeting (13th September, AM)

Presentations of Recent Activities

- HPC for Data Science (Computing Environment)
- Data Science Infrastructure (System and Tools)
- Research Data Management (Plan and Platform)
- AI & ML for Accelerators and Physics Research (Platform)
- Datability Science (Interdisciplinary PJs, Life Design Innovation, Education)
- Biomedical Imaging (Open Source Web-based Apps)



2018-2019 WG Activities Highlights

Webinars

10/2/2018	Learning to teach machines to learn: bridging the gap between formulas and code	Matthew J. Holland	Institute for Dataability Science, Osaka University
11/9/2018	Introduction to classification	Steffen Herbold	Institute of Computer Science, University of Göttingen
12/14/2018	Introduction to Deep Learning For Communication Networks	Zubair Fadlullah	Graduate School of Information Sciences, Tohoku University
3/22/2019	Sustainable Software Development in an Academic Setting	Hartwig Anzt	Karlsruher Institute for Technology



2018-2019 WG Activities Highlights

Visiting Partners @ Göttingen

- Dr. Chifumi Nishioka, Kyoto University Library
- Meeting with University Library and University computing centre
- Topics
 - Library Services
 - Persistent Identifiers
 - Open Data



2018-2019 WG Activities Highlights

Visiting Partners @ Göttingen

- Prof. Ikki Fujiwara, National Institute for Informatics & Prof. Takaaki Aoki, Kyoto University
- Topics
 - Open Science
 - Research Data Management
 - Infrastructur for Services



2018-2019 WG Activities Highlights

Teleconferences

- Regular Teleconferences
 - May 23rd 2018
 - August 13th 2018 (additional to the F2F during the summer school)
 - March 18th 2019
 - August 19th 2019



2018-2019 WG Activities Highlights

Joint Publications (KIT and Kyoto)

- Michael Färber, Chifumi Nishioka, Adam Jatowt: ScholarSight: Visualizing Temporal Trends of Scientific Concepts. Joint Conference on Digital Libraries, pp.438-439, 2019.
- Chifumi Nishioka, Michael Färber: Evaluating the Availability of Open Citation Data. BIRNDL@SIGIR, pp.123-129, 2019.



2018-2019 WG Activities Highlights

Data Science Summer School 2018

- August 2nd – 16th in Göttingen
- 32 Participants
 - 10 Students from HeKKSaGOn Universities
- 2 Speakers from Japan
 - Shinji Shimojo
 - Shoichi Eguchi
- Working Group F2F Meeting during summer school





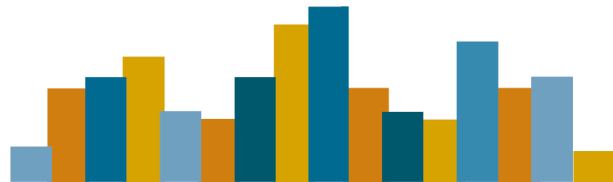
Data Science Summer School 2019

- August 5th – 16th in Göttingen
- 33 Participants (17 from HeKKSaGOn)
 - 3 from Kyoto University
 - 6 from Osaka University
 - 8 from Tohoku University
- Speaker M. Holland from Osaka University
- Funded by the DAAD with funds of the Federal Foreign Office



Summer School 2020

- Planning Phase
- Call and opening of the registration December 2019
- Funding proposal submitted September 12th



Planned Cooperation

- DAAD – Kyoto funding opportunity for exchange of early career scientists -> SUBMITTED
- Open Science & Citizen Science
- Short term goals:
 - common approaches
 - technical challenges in data management
- Long term goals:
 - joint citizen science projects
 - joint data platform for citizen science projects



Joint Application Topic 1: Research Data Management

Objectives:

Better accessibility of research results among members

Strategy:

Content listing with contact points

Topics:

Standardized metadata format

Making data FAIR (findable, accessible, interoperable, re-usable)



Joint Application Topic 2: Education and broader engagement

Application Fields:

- educational frameworks
- Joint degree/supervision agreements

Possible joint work on:

- Webinars
- Summer Schools
- Exchange of teaching and training materials (OER; open educational resources)
- Review of curricula
- Exchange study program



Next steps

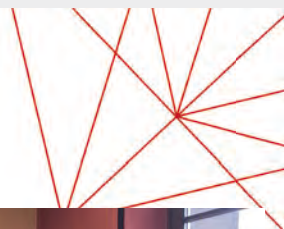
Organizing a workgroup meeting

- co-located with the next HeKKSaGOn Data Science Summer School on August 2020

Continue our webinar series (general and topical ones)

Further exploring the support mechanisms from JSPS, DAAD, DFG:

- E.g. staff/researcher exchange programm short/mid-term
- Identify possible collaborative research projects (AI for physics, HPC pipeline, etc.)
- Possible joint publication from workshops or best practice comparison



Thank you!





HEKKSAGON FOR FUTURE: HOW CAN THE GERMAN-JAPANESE UNIVERSITY NETWORK CONTRIBUTE TO SUSTAINABLE DEVELOPMENT?

Moderation

Dr. Nicole Aeschbach

Institute of Geography, Heidelberg University

List of Participants

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What can we do in the universities?




Science



Humanities

Politics

Which of the sustainable development goals could be in particular of interest to students and young researchers?



5 GENDER EQUALITY

Promote compatibility of
ACADEMIC CAREER
and
FAMILY LIFE

13 CLIMATE ACTION

Raise awareness of
CLIMATE ISSUES
through
COOPERATION

How can an international network like HeKKSaGOn contribute to the global sustainable development?



SHARE:

- Database of research
- Facilities, equipment
- Joint projects, PhD and other programs

ACCESS:

- HeKKSaGOn SNS presence
- Staff members
- Selective availability of research know-how

INDUSTRY:

- Consulting services for organizations
- Impactful statements
- Funding and sponsorship

Which added-value could HeKKSaGOn provide to students and young researchers?



Student Network

- joint seminars
- workplace
- database/ contact details

Stronger awareness of the alliance



Extended student conference including visits of all partner universities in the host country



**Thank you for your attention!
See you in Kyoto!**



Joint Statement




*In the second cycle, the bottom up approach of the first cycle shall be completed by strategic decisions of the alliance on **priority areas** which are related to **great societal and global challenges** and the **UN Sustainable Development Goals (SDGs)**.*

Joint Statement Priority Areas

1. Transcultural studies and the transformation of cultural heritage
2. Data science, digitization, and artificial intelligence
3. Health, well-being, safe and resilient societies
4. Engineering molecular systems and bioimaging


Joint Statement President's Conference



- Meetings of the presidents besides working group meetings in combination with academic conference on specific topics in one of the priority areas
 - Researchers invited to submit proposals for specific workshops
 - Renowned external or internal experts will be invited
- 

Joint Statement Working Groups




- Working group achievements highly appreciated and encouraged to continue collaboration
 - Arrangements for working groups shall be revised
 - Existing and new initiatives invited to submit applications for project funding for 3-5 years
- 

Joint Statement Selection of projects



Main criterias:

- Relevance of the topic to the HeKKSaGO priority areas
 - Relevance for / interaction with society
 - Inclusion for young researchers and graduate students, as well as educational aspects
 - Multidisciplinary / data-driven approach
- 

Joint Statement

The next HeKKSaGOn University Presidents' Conference will be hosted by **Tohoku University in autumn 2021**. The topic of the academic conference will focus on priority area 3.

“Health, well-being, safe and resilient societies“



HeKKSaGOn
Heidelberg | Kyoto | Karlsruhe | Sendai | Göttingen | Osaka
NETWORK OF UNIVERSITIES

**The 7th
German-Japanese University
Presidents' Conference**
12th–13th September 2019
Heidelberg University

HEIDELBERG UNIVERSITY

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