

Workshop: Multidisciplinary collaboration for sustainable development

Tokyo, October 29th-30th, 2018

Short Presentations of the Speakers

Lennart Bergström



Lennart Bergström is Professor of Materials Chemistry at the Department of Materials and Environmental Chemistry at Stockholm University in Sweden where he also currently serve as Dean of Chemistry. His research interests are broad and range from processing and characterisation of bionanoparticles and their hybrids to time-resolved studies on nanoparticle assembly. Bergström has received numerous awards, e.g. the Jacob Wallenberg Materials Award, the Humboldt Senior Research Award, the Norblad-Ekstrand medal and the Stockholm Innovation Prize. He is a fellow of the European Ceramic Society and the Royal Society of Chemistry and was in 2013 elected as a member of the Royal Swedish Academy of Engineering Sciences.

Haruhiko Bito

Dr. Bito is currently Professor and Chair of the Department of Neurochemistry, and also Director of the Medical Scientist Training Program at the University of Tokyo School of Medicine. The ambition of Dr. Bito's laboratory is to go beyond just understanding the makeup of the synapses, and to tease apart the molecular, cellular and systems principles underlying activity-dependent changes in neuronal circuitry during learning and memory. In particular, the Bito laboratory pioneered in deciphering the intricate and interactive relationship between the information encoded in the genome and the ongoing synaptic activity, and showed the critical role of CREB-Arc signaling in controlling long-term memory formation and maintenance of long-lasting changes in the brain.

Haruhiko Bito graduated from the University of Tokyo with an MD and a PhD in Biochemistry in 1993. After finishing a postdoc in Molecular and Cellular Physiology at Stanford as a HFSP long-term fellow, Dr. Bito got responsibility for his own laboratory in Pharmacology at Kyoto University in 1997. He expanded his research group significantly, when he moved to the Department of Neurochemistry at the University of Tokyo in 2003. Dr. Bito is the Leading Investigator of a National Consortium Project on "Brain information dynamics underlying multi-area interconnectivity and parallel processing".



Professor Laura Fratiglioni

Laura Fratiglioni, currently employed as professor at KI, is the leader of the medical sector, and former Director of the Aging Research Center (ARC). She is a medical doctor, specialized both in Neurology and Epidemiology. She has scientific, clinical, and pedagogical commitments.

Her education in Medicine and Neurology took place in Italy, whereas her training in research was mostly carried out in Sweden. As clinician, Fratiglioni has worked mostly in Italy at the University Hospital of Florence; as researcher she has been mostly active at Karolinska Institutet (KI).

She is the principal investigator of The Swedish National Study on Aging and Care-Kungsholmen population study, the scientific coordinator of the Kungsholmen Project on Aging and Dementia, and co-investigators of several EU projects. Since 2018, she is the director of the National E-infrastructure on Aging Research (NEAR) supported by Swedish science council VR. Her major scientific contributions concern primary and

secondary prevention of dementia, and more recently multimorbidity and longevity among the oldest old adults.



Joakim Gustafson



Joakim Gustafson is professor in speech technology and head of the department of Speech, Music and Hearing at KTH. He has been a prolific researcher and active systems developer of spoken and multimodal dialogue systems since 1993. Gustafson has an industrial background in national telecommunications company Telia Research where he led the research work of the EU project NICE, that developed a computer game where kids could interact with animated 3D characters using a combination of speech and gestures. He currently has three research projects where social robots act as third-hand helpers in assembly, social skills coaches for autistic children and companions for the elderly with the task of detecting early signs of dementia.

Björn Högberg

Björn Högberg is an associate professor and head of the division of biomaterials at the Department of Medical Biochemistry and Biophysics at Karolinska Institutet. He is a Knut and Alice Wallenberg Foundation Academy Fellow and an ERC Consolidator grantee. Högberg's research is focused on developing new methods



and molecular tools for cell biology research using DNA devices, mainly DNA nanotechnology and DNA origami. His focus has been both in development of the basic technology and in applications to probe and manipulate cell signaling by cell surface receptor clustering. His research also involve using these novel devices for drug delivery in cancer.

Högberg earned his MSc in Physics at Uppsala University and did his PhD in Physics both at Chalmers University, where he started, and at Mid Sweden University where he graduated in 2007. After that he joined the lab of William Shih as a post-doc at Harvard Medical School and Dana Farber Cancer Institute in Boston, USA. He joined Karolinska Institutet in 2010 as an Assistant Professor at the dept. of Neuroscience and now holds a faculty position at the dept. of Medical Biochemistry and Biophysics.

Yuichi Ikuhara

Yuichi Ikuhara is Professor and Director of Nanotechnology Center, Institute of Engineering Innovation at University of Tokyo since 2003. He received Dr.Eng. from Department of Materials Sciences, Kyushu University. He then joined Japan Fine Ceramics Center (JFCC) in 1988, and was the Microstructure Characterization Division Manager at JFCC from 1993. In 1996, he joined University of Tokyo as an associate professor of Materials Sciences. He was a visiting assistant professor at Case Western Reserve University from 1991 to 1993. His current research interest is in interface and grain boundary and interface phenomena, advanced transmission electron microscopy (STEM, HREM, EDS, EELS), high-temperature ceramics, dislocation technology, phase transformation, theoretical calculations and so on. Dr. Ikuhara is author and coauthor of about 740 scientific original papers in this field, and has more than 360 invited talks at international and domestic conferences. He received "Medal with Purple Ribbon" from the Emperor of Japan (2016), "Humboldt Research Award" from Alexander von Humboldt Foundation (2010), "Honda Frontier Prize" from Honda Foundation (2010), "Sosman Lecture Award" (2015) and "Ross Coffin Purdy Award" (2008) from the American Ceramics Society and so on. He is a fellow of the American Ceramics Society (2011), member of World Ceramic Academy (2014), and an associate member of the Science Council of Japan. He holds a group leader position at JFCC and WPI (World Premier International Research Center Initiative) professor at Tohoku University concurrently.



Akira Isogai

Akira Isogai graduated from The University of Tokyo in 1980 and received his PhD from the Faculty of Agriculture at The University of Tokyo in 1985. He spent 1985 as a Postdoctoral Fellow in the Department of Chemistry at the Institute of Paper Chemistry (Appleton, WI, USA). Dr. Isogai was appointed as an Assistant Professor at The University of Tokyo in 1986, an Associate Professor in 1994, and a Professor in the Department of Biomaterial Sciences at The University of Tokyo in 2003.

He is president of the Japan Nanocellulose Forum, a board member of Japan Technical Association of Pulp and Paper Industry and other academic societies, an Associate Editor of Cellulose (Springer Nature), and a member of the Advisory Editorial Boards of Biomacromolecules (ACS) and other scientific journals. He received the 2015 Anselme Payen Prize from the American Chemical Society, the Marcus Wallenberg Prize (Sweden) in 2015, the Japan Prize of Agricultural Science and Yomiuri Nogaku Prize in 2016, the Honda Prize in 2016, the Prize of the President of the Japan Patent Attorneys Association in 2017, the Fujihara Prize in 2017, and others. He received an Honorary Doctor of Science in Technology from Aalto University, Finland, in 2016.



Masa Kikkawa

Masa Kikkawa is a professor in the Department of Cell Biology and Anatomy, Graduate School of Medicine, The University of Tokyo. Kikkawa's research focus has been cilia, which is the eukaryotic cell's antenna and propeller using cryo-electron microscopy and genetics. He is also a director of shared cryo-electron microscopy facilities. Kikkawa received his MD in 1992 and Doctor of Medicine from UTokyo in 1997. He was a staff scientist from 1995 to 2001 at Department of Cell Biology and Anatomy, Graduate School of Medicine, UTokyo. Then, he became an assistant professor at Department of Cell Biology, Univ. of Texas, Southwestern Medical Center in 2001. He came back to Japan as a professor of Kyoto University in 2007. From 2009, he holds the current position.



Kohei Miyazono



Professor Kohei Miyazono is currently the Dean of the Graduate School of Medicine, The University of Tokyo. He graduated from the Faculty of Medicine at the University of Tokyo in 1981. After clinical training in internal medicine and hematology, he worked as a guest scientist at the Ludwig Institute for Cancer Research (Uppsala branch, Sweden, Director: Prof. Carl-Henrik Heldin) from 1986-1988. After he worked as an assistant professor at the Third Department of Internal Medicine, The University of Tokyo from 1988-1990, he moved to Sweden as a group leader at the Ludwig Institute for Cancer Research in 1990. In 1995, he became the Member and Chief of the Department of Biochemistry, Japanese Foundation for Cancer Research (JFCR) in Tokyo. He then moved to the University of Tokyo as a Professor of the Department of Molecular Pathology, Graduate School of Medicine in 2000. Since 2011, he is the Dean of Graduate School of Medicine, The University of Tokyo.

His laboratory has had long-standing interests in the signaling pathways of transforming growth factor b (TGF-b) family and their roles in cancer and various diseases. In particular, his group has long-term experience in biochemical and molecular biological analyses on the roles of TGF-b in various types of cancer, including lung cancer, pancreatic cancer, and glioblastoma. He has received several awards, including Medal of Honor with purple ribbon from the Japanese government, 2009, and the Japan Academy Prize, 2011. He has also received Honorary Doctor of Medicine of Uppsala University, Sweden, 1999, and American Association for the Advancement of Science Fellow, 2012. He is currently a member of the Japan Academy.

Makoto Murakami

Makoto Murakami is a Professor at the Laboratory of Microenvironmental and Metabolic Health Sciences, Center for Disease Biology and Integrative Medicine, Graduate School of Medicine, the University of Tokyo. He received his B.A. (1986), M.S. (1988) and Ph.D. (1991) degrees from the Faculty of Pharmaceutical Sciences, the University of Tokyo. His postdoctoral training was at the University of Tokyo (1991-1993) and Harvard Medical School (1993-1995). He worked as an associate professor at Showa University (1995-2005) and as a project leader at Tokyo Metropolitan Institute of Medical Science (2005-2016), and is now a professor at the current position (2017-).

The main theme of his research is to clarify the novel roles of lipids in health and diseases. His research interests extend from basic biochemistry and molecular biology to pathophysiology of immunological, metabolic, and skin diseases. He has authored 180 peer reviewed original articles and 60 review articles on lipid biochemistry and biology. He is a core member of the Japanese Lipid Biochemistry Society.

He received the Young Investigator Awards for the Pharmaceutical Society of Japan and the Japanese Society of Inflammation and Regeneration, Investigator Awards for the Tokyo Metropolitan Institute of Medical Science and the Bureau of Social Welfare and Public Health at Tokyo Metropolitan Government, and Award for the Terumo Science Foundation.



Katsuya Iijima

Katsuya Iijima is a Professor at Institute of Gerontology, The University of Tokyo (UTokyo). His main research interests are: Geriatric medicine (especially, Cardiovascular diseases, Dementia, etc), Gerontology, prevention of frailty due to sarcopenia and Patient-centered Home medical care. Iijima is a member of the Japanese Society of Internal Medicine, Japanese Circulation Society, The Japan Geriatrics Society, The Japan Atherosclerosis Society, The Japanese Society of Hypertension, Japanese Society of Anti-Aging Medicine, Japanese Mibyo System Society Japan, Society for Dementia Research, Japan Society for Biomedical Gerontology, The Japanese Society for Parenteral and Enteral Nutrition, Japan Society of Medical Education and Japanese Society of Public Health. Iijima received his M.D. (1990) from Jikei Medical University and Ph.D. (2001) from the University of Tokyo. He has also studied at Stanford University (CA, USA) 2002-2004 doing basic research as Research Fellow of Cardiovascular Medicine. He first held position of Fellow in Geriatric Medicine at UTokyo Hospital (1997-2001), then became Instructor (2001-2002, 2005-2006), Assistant Professor (2006-2011), Associate Professor (2011-2016) and was appointed to his current position of Professor in 2016.



Anders Karlhede

Anders Karlhede is professor at the Department of Physics, Stockholm University. He is Senior Advisor to the President and was formerly Deputy Vice-Chancellor and Dean, Faculty of Science. Karlhede studied mathematics and physics at Uppsala University and received PhD in theoretical physics at Stockholm University in 1981, and then docent in theoretical physics in 1984. Anders Karlhede has taught, developed and initiated a broad range of courses at all levels and was awarded the pedagogical prize within the Faculty of Science in 2000. His research focuses on contributions to general relativity, high-energy physics and condensed matter physics. He is a member of the Royal Swedish Academy of Sciences since 2013.



Miia Kivipelto

Miia Kivipelto (MD, PhD) is Professor in Clinical Geriatrics at Karolinska Institutet, Center for Alzheimer Research and senior geriatrician and Director for Research & Development of Theme Aging at Karolinska University Hospital in Stockholm. Part of her *Nordic Brain Network* research team with around 45 researchers is located at University of Eastern Finland where she has part time position as Professor of Neurogeriatrics. She was recently pointed as Visiting Professor in Neuroepidemiology, School of Public Health, Imperial College London, UK. Dr. Kivipelto's translational research focuses on the prevention, early diagnosis and treatment of cognitive impairment, dementia and Alzheimer's disease (AD). Through epidemiological studies, Prof. Kivipelto has identified various lifestyle and vascular risk factors for dementia and interactions with genetic factors. She has developed the first tool for predicting dementia risk based on midlife risk profiles. Professor Kivipelto is the PI of the landmark FINGER Randomized Controlled Trial (RCT) (*Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability*), which is so far the only large, long-term randomized controlled trials (RCT) to show significant benefits on cognition and functional level among at-risk persons from general population. Professor Kivipelto has also contributed to understanding biological mechanisms underlying Alzheimer's Dementia, with studies in humans and animal models, as well as characterisation of biomarkers that can aid early diagnosis, prognosis and treatment monitoring in AD.



Erik Lindahl



Erik Lindahl is professor in Biophysics at Stockholm University and at KTH. Lindahl received his Master of Science in Engineering Physics at University of Lund and PhD in Theoretical Biophysics at KTH. A part of Lindahl's time is currently devoted to the position as vice director for the strategic research area Swedish e-Science Research Center and as director for SU's part of the master programme in Molecular Technology for Life Science. Together with a number of universities in Europe Lindahl has been involved in establishing a new EU-funded center-of-excellence for computational biomolecular research - BioExcel. Since 2014, he has served on the Scientific Steering Committee for the European Computer Infrastructure PRACE, and during 2017 Erik serves as of the Scientific Steering Committee and sit on the PRACE Board of Directors.

Maria Lindskog

Maria Lindskog is an Associate Professor at the Department of Neurobiology, Care sciences and Society at Karolinska Institutet (KI), and the co-ordinator of the Center of Alzheimer Research at KI. She has a long-standing interest in the regulation of synaptic strength and the functional implications of synaptic plasticity and homeostasis. Currently, the Lindskog laboratory is focusing on understanding the role of astrocytes in the regulation of synaptic strength and plasticity. Maria Lindskog graduated from KI in 2001, with a PhD in Neuroscience. She then did a first post-doc at KTH on computer models of intracellular signaling networks, before she moved to Stanford University in 2002. Working in the laboratory of R.W. Tsien she studied synaptic scaling and discovered an co-ordinated pre and postsynaptic changes in response to inactivity. When Maria Lindskog received the Ingvar Carlsson Award and an independent assistant professor position she returned to the Karolinska Institutet in 2006 to set up her independent laboratory.



Lennart Nilsson

Professor of Molecular Modeling, Karolinska Institutet (KI), Department of Biosciences and Nutrition since 1998.

Nilsson got his PhD in Theoretical Physics, Royal Institute of Technology KTH, after his Engineering studies in Engineering Physics, also at KTH. Then followed a Postdoc at Chemistry Department (Prof. M. Karplus) at Harvard University (1983-1984).

Positions and commissions of trust are Pro-Dean of Doctoral Education, KI (2016-), Executive Editor of BBA General Subjects (2016-), Deputy Head of the Department of Biosciences and Nutrition, KI (2015-), Director of Graduate Studies, KI, Department of Biosciences and Nutrition, 2003-2016, Chairman (2006-2012) and secretary (2012-2017) of the National Committee for molecular biosciences of The Royal Swedish Academy of Sciences Chairman of the National Committee for Pure and Applied Biophysics of the Royal Swedish Academy of Sciences (2003-2005), Councilor to the President (2006-2008) , Vice-President (2008-2010) and President (2011-2012) of the Int. Soc. for Quantum Biology and Pharmacology (ISQBP).

Lennart's research uses computer simulation to study atomic-level interactions between proteins and nucleic acids, for example transcription factor recognition, as well as factors that may potentially interact with, and stabilize, intrinsically disordered protein regions.



Professor Junichiro Okata

Junichiro Okata is currently the director of Institute of Gerontology and a professor of Department of Urban Engineering, the School of Engineering, the University of Tokyo. Following that he graduated from the Faculty and the School of Engineering at the University of Tokyo and received Ph.D, he built his research career by working as an assistant of the Department of Urban



Engineering, the University of Tokyo. After that, he worked as an assistant, a lecturer, an assistant professor of Department of Architecture, Yokohama National University. In 1996, he became an assistant professor of the Department of Urban Engineering, the University of Tokyo, and, subsequently, a professor in 1999. Since 2003, he became a vice leader of "Global Center of Excellence for Sustainable Urban Regeneration" research project and explored methods of formation of sustainable urban space. From 2009, he joined as a member of Institute of Gerontology and made his effort to research on housing and urban development in a super aged society. In addition, after the East Japan Earthquake occurred in 2011, he dedicated himself to supporting tentative city development as well as community development through reconstruction process in tsunami-hit cities and towns such as Otsuchi town. In April 2013, he held the position of director of the institution and commenced Graduate Program in

Gerontology, The University of Tokyo Global Leadership Initiative for an Age-Friendly Society, which is an interdisciplinary graduate program to train global leaders who can create an age-friendly society.

Professor Naoya Shibata

Naoya Shibata is a Professor in the Institute of Engineering Innovation, The University of Tokyo. He received his PhD in Materials Science in 2003 at University of Tokyo. He was a JSPS Research Fellow at Oak Ridge National Laboratory (2003-2004) in USA. Then, He joined the Institute of Engineering Innovation at the University of Tokyo from 2004 and he became a Professor there from 2017. His research focuses on the development of new imaging techniques in scanning transmission electron microscopy and their application to interface studies in materials and devices. He has authored or co-authored more than 200 publications in refereed journals. His honors include Richard M. Fulrath Award, the American Ceramic Society (2018), the 5th Nagase Award (2015), the 60th Seto Prize, The Japan Microscopy Society (2015), the 15th Sir Martin Wood Award (2013), the 6th Kazato Prize (2013).



Professor Junichiro Shiomi

Junichiro Shiomi is professor in the Department of Mechanical Engineering, School of Engineering, the University of Tokyo (UTokyo). He received B.E. (1999) from Tohoku University, and Ph. D. (2004) from Royal Institute of Technology (KTH), Sweden. Leading the Thermal Energy Engineering Lab, he has been pursuing research to advance thermal management, waste heat recovery, and energy harvesting technologies based on nano-to-macro innovation in materials, structures, and systems. Prof. Shiomi has been leading several projects including Core Research for Evolutional Science and Technology (JST-CREST), Precursory Research for Embryonic Science and Technology (JST-PRESTO), and New Energy and Industrial Technology Development Organization (NEDO), and Ministry of the Environment (MOE) projects. He has been coordinators of the EU/Japan Interdisciplinary Global Mechanical Engineering Education (IGM) program, the Global Mechanical Engineer (GME) program between UTokyo and KTH, EPFL and Rice University, the Top Global University Project between UTokyo and Stockholm Universities.



Daniel Söderberg

Daniel Söderberg received his MSc in Vehicle Engineering (1994) and PhD in Fluid Mechanics (1999), both at KTH. He then was employed at the Swedish Pulp and Paper Research Institute, which later changed name to Innventia, from 1999 to 2013. From 2009 he was the Deputy Director of the business area Material Processes. Concurrently to this position he has a position as Adjunct Professor at KTH during the period 2008-2014. Early 2014 he moved to KTH as full-time employee. Until March 2018 Söderberg was the Head of the Department of Mechanics at KTH. Since March 2018 he is the Director of the national research platform Treeseearch, www.treeseearch.se, which is hosted by KTH. His research is related to multiphase flows, specifically in connection to processes related to the manufacturing of forest-based materials, and has been active within the Wallenberg Wood Science Center, wwsc.se, and a part of the management team of the center since the start in 2009.



Shu Takagi

Shu Takagi is a Professor at Department of Mechanical Engineering and Department of Bioengineering, The University of Tokyo, since 2010. His areas of expertise include numerical simulations and experimental investigations on dispersed multiphase flows, especially bubbly flows and blood cell flows, medical ultrasound, hierarchical integrated simulation of human body, micro-scale heat transfer, molecular thermo-fluid mechanics and multiscale analysis of thermo-fluid phenomena. Takagi has written over 20 review articles including Annual Review of Fluid Mechanics and has given more than 30 keynote lectures in conferences.

Takagi received his Ph.D. (1995) in Mechanical Engineering from the University of Tokyo. He first held the position of Research Associate at The University of Tokyo (1995-1996) and Tokyo Institute of Technology (1996-1998) and then became an Assistant Professor (1998-2002) and Associate Professor (2002-2010) at Department of Mechanical Engineering the University of Tokyo. He was a Visiting Researcher at The Johns Hopkins University 1992-1993 and 2000-2001. He also worked as a Team Leader at RPCS, Organ and Body Scale Team, RIKEN (2007-2012).



Xiaodong Zou

Xiaodong Zou is a full professor and deputy head of the Department of Materials and Environmental Chemistry, Stockholm University. She received her B.Sc. in Physics at Peking University in 1984, and Ph.D. in structural chemistry at Stockholm University in 1995. She joined the faculty at Stockholm University in 1996 and became professor 2005. Xiaodong Zou has made important contributions in the development of electron crystallographic methods. Her group has developed several image and diffraction-based methods and software for accurate atomic structure determination of unknown crystals, and solved a large number of complex structures, especially porous materials such as zeolites and metal-organic frameworks. She has also been working on design, synthesis and applications of novel porous materials. She is a council member of the International Zeolite Association and a member of the Structure Commission of International Zeolite Association. She has co-authored over 270 peer-reviewed publications, and given more than 170 invited talks. Xiaodong has received several awards given by the Royal Swedish Academy of Sciences, and is an academician of the Royal Swedish Academy of Engineering Sciences (IVA), and a fellow of Royal Chemistry Society, UK.

