

TOKYO  
NEW YORK

STEM  
CELL  
SUMMIT

FRIDAY, SEPTEMBER 8, 2017



# AGENDA

FRIDAY, SEPTEMBER 8

9:00AM

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REGISTRATION & CHECK-IN

9:30AM

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WELCOME REMARKS

Susan L. Solomon, JD  
NYSCF Research Institute

Yoshinori Murakami, MD, PhD  
Institute of Medical Science,  
University of Tokyo

9:40AM

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IPSC TECHNOLOGIES FOR MODELING  
PROGRESSIVE MULTIPLE SCLEROSIS  
AND DEVELOPING NOVEL TREATMENTS

Valentina Fossati, PhD  
NYSCF Research Institute

10:00AM

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Q&A

10:05AM

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MODELING THE HEMATOLOGICAL  
MALIGNANCIES

Toshio Kitamura, MD, PhD  
Institute of Medical Science,  
University of Tokyo

10:25AM

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Q&A

10:30AM

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MORNING BREAK/POSTER SESSION

11:15AM

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IPSC DISEASE MODELS OF  
PARKINSON'S DISEASE

Scott Noggle, PhD  
NYSCF Research Institute

11:35AM

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Q&A

11:40AM

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KEYNOTE SPEAKER I:  
USING STEM CELLS TO UNDERSTAND  
AND TREAT MOTOR NEURON DISEASE

Kevin Eggan, PhD  
Harvard University

12:10PM

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Q&A

12:15PM

LUNCH

1:30PM

CELL FIBERS FOR CELL THERAPIES

Shoji Takeuchi, PhD  
Institute of Industrial Science,  
University of Tokyo

1:50PM

Q&A

1:55PM

AUTOMATING STEM CELL RESEARCH

Daniel Paull, PhD  
NYSCF Research Institute

2:15PM

Q&A

2:20PM

AFTERNOON BREAK/POSTER SESSION

3:05PM

KEYNOTE SPEAKER II:  
IPS TECHNOLOGY AND ITS FUTURE  
THERAPEUTIC POTENTIAL

Hiromitsu Nakauchi, MD, PhD  
Institute of Medical Science,  
University of Tokyo

3:35PM

Q&A

3:40PM

PANEL DISCUSSION:  
STEM CELL ORGANOID  
ENGINEERING AND APPLICATIONS

MODERATOR  
Kevin Eggan, PhD

PANELISTS  
Valentina Fossati, PhD  
Hiromitsu Nakauchi, MD, PhD  
Scott Noggle, PhD  
Shoji Takeuchi, PhD

4:40PM

CLOSING REMARKS

Teruo Fujii, PhD  
Institute of Industrial Science,  
University of Tokyo

4:50PM

EVENT CONCLUDES

## **SUSAN L. SOLOMON, JD**

Susan L. Solomon is Founder and Chief Executive Officer of The New York Stem Cell Foundation (NYSCF) Research Institute, the world's leading independent non-profit research institute dedicated to translating cutting-edge stem cell research into clinical breakthroughs and cures for patients. Since 2005, NYSCF has invested in "tipping point" stem cell research, accelerating progress in finding treatments and cures in over 70 disease areas including diabetes, ALS, multiple sclerosis, Parkinson's, Alzheimer's, heart disease, cancer, schizophrenia, bone injury, and macular degeneration, among other diseases.

A veteran healthcare advocate, Ms. Solomon serves on the boards of a number of prominent diabetes and regenerative medicine organizations including the College Diabetes Network and the Global Alliance for iPSC Therapies. She also serves on the Board of Directors of the Regional Plan Association. A lawyer by training and a chief executive and entrepreneur by experience, Ms. Solomon started her career as an attorney at Debevoise & Plimpton, then held executive positions at MacAndrews and Forbes and APAX (formerly MMG Patricof and Co.). She was the founder and President of Sony Worldwide Networks, the Chairman and CEO of Lancit Media Productions, and then served as the founding CEO of Sothebys.com, prior to starting her own strategic management consulting firm Solomon Partners LLC in 2000. She received her BA cum laude from New York University and her JD from Rutgers University School of Law, where she was as an editor of the Law Review.

## **YOSHINORI MURAKAMI, MD, PHD**

Dr. Murakami is Professor and Dean of the Institute of Medical Science, the University of Tokyo (IMSUT). After the initial training as a medical doctor at the University of Tokyo Hospital, he has been involved in the molecular genomic analyses and its application to the molecular diagnosis of human cancer in the University of Utah, USA and the National Cancer Center Research Institute, Japan and identified a novel tumor suppressor gene, CADM1. He moved to the IMSUT in 2007 and is now the principal investigator of the Biobank Japan Project. He serves as Dean of the IMSUT since 2015. He was awarded the Academic Award from the Princess Takamatsu Cancer Research Fund, Japan in 2013.

## **VALENTINA FOSSATI, PHD**

Valentina Fossati is a Senior Investigator at the The New York Stem Cell Foundation (NYSCF) Research Institute, where she oversees the multiple sclerosis research program with a focus on working towards novel treatments for the progressive forms of multiple sclerosis. She obtained her PhD in 2008 from the University of Bologna. She moved to New York, at Mount Sinai School of Medicine as a visiting student during her PhD, to continue as a NYSCF-Druckenmiller postdoctoral fellow. A diagnosis of multiple sclerosis in 2009 shifted her research interest to better understanding this disease and in particular its neurodegenerative component, responsible for the irreversible accumulation of neurological disabilities. Bringing the stem cells expertise to the MS field, Dr. Fossati developed a research plan that focuses on modeling MS with human induced pluripotent (iPS)-derived cells, understanding genetic susceptibility by studying patient-specific cells and, ultimately, drug discovery and cell replacement therapies to promote neuroprotection and remyelination. Her group generated iPS lines from MS patients and is currently developing co-culture systems including neurons, oligodendrocytes, astrocytes and microglia to dissect the role of each cell type in the progression of the disease.

**TOSHIO KITAMURA, MD, PHD**

Dr. Toshio Kitamura is Professor of the Institute of Medical Science, the University of Tokyo (IMSUT). He was trained as a clinical doctor at the hospital of University of Tokyo for two years and then as a researcher in retrovirology for two years at National Cancer Institute. During an additional clinical and basic training as a hematologist for 5 years, he established a cytokine-dependent cell line TF-1 from a patient with myelodysplastic syndromes (MDS) and obtained an MD. He then formed a hypothesis using TF-1 that receptors for IL-3 and GM-CSF share a common subunit. In 1989, he moved to DNAX Research Institute in California as a post-doctoral fellow, where he proved his hypothesis by identifying cDNAs of IL-3 and GM-CSF receptors. This was the first common subunit identified for cytokine receptors. After becoming a principal investigator at DNAX, he established a retrovirus-mediated expression cloning method and worked on signal transduction. In 1996, he moved to the IMSUT, started several new projects based on retrovirus technologies, and identified many novel molecules by expression cloning. From 2006, he focused on the research for hematological malignancies and hematopoietic stem cells. He established and characterized a variety of mouse models for hematological malignancies, and also established a G0 marker which could identify cells in the G0 phase including hematopoietic stem cells. He was awarded Hajime Memorial Award in 1991 (DNAX Research Institute), Gold Medal Award in 1999 (Tokyo Technoforum) and Takashi Oginuma Award (Japanese Leukemia Research Foundation) in 2005.

**SCOTT A. NOGGLE, PHD**

Scott A. Noggle, PhD is the Senior Vice President for Research at the New York Stem Cell Foundation. He has a long-standing interest in the derivation and use of human stem cells to understand human development and disease. Current work in his lab is aimed at applying new advances in pluripotent stem cell biology and cell reprogramming to the creation of human models of neurodegenerative diseases, such as Alzheimer's disease and Parkinson's disease to discover new disease targets. To make all of this possible, he also directs a group at NYSCF developing large-scale automated systems that use stem cells as a tool to understand how our genetics impacts susceptibility to these diseases. He and his team have developed high throughput automated systems for deriving new stem cell lines and differentiated cells to study disease models from large numbers of patients in parallel.

**KEVIN EGGAN, PHD**

During his PhD training, Dr. Eggen actively pursued projects focused on cloning, stem cells and reprogramming after nuclear transfer under the guidance of genetics pioneer, Dr. Rudolf Jaenisch. He stayed in the Dr. Jaenisch's lab after his graduation for a one-year postdoc training. In 2003, he moved to Harvard University as a junior fellow and then became an assistant professor of Molecular & Cellular Biology at the Stem Cell Institute in 2005. Dr. Eggen was promoted to Professor in the Department of Stem Cell and Regenerative Biology in 2012. The success of Dr. Eggen's laboratory in the study of motor neuron disease has led to his appointment as the Director of the Stem Cell Program at the Stanley Center for Psychiatric Research at the Broad Institute. In this role, he is leading a group of scientists to expand the platform to increase reproducibility of stem cell and reprogramming technologies with the ultimate goal of improving understanding and treatment of psychiatric diseases.

## **SHOJI TAKEUCHI, PHD**

**CONTINUED**

Shoji Takeuchi received the BE, ME, and Dr. Eng. degrees in mechanical engineering from the University of Tokyo, Tokyo, Japan, in 1995, 1997, and 2000, respectively. He is currently a Professor and Director of the Center for International Research on Integrative Biomedical Systems (CIBiS), Institute of Industrial Science (IIS), University of Tokyo. He also directs a collaborative research center for Bio/Nano Hybrid Process at IIS. His current research interests include 3D tissue fabrication, implantable devices, artificial cells/lipid bilayer systems, and biohybrid MEMS. Recently he developed “cell fiber technology” that is a microfluidic technology to encapsulate cells in the core of a hydrogel microfiber. The fiber allows us to culture the cells in 3D microenvironment for a long time without having a necrosis problem. It is also used as a scaffold for formation of fiber-based tissues such blood vessels, nerve cords, and muscle fibers. He is now applying this technology for beta-cells transplantation, where human iPS-derived beta-cells are encapsulated in a fiber and transplanted into the diabetic animals; the fiber functions as a removable graft to normalize blood glucose concentration.

## **DANIEL PAULL, PHD**

Dr. Paull is Vice President, Automation Systems and Stem Cell Biology at the NYSCF Research Institute. Daniel oversees the day-to-day operation of the NYSCF Global Stem Cell Array in both the production of induced pluripotent stem cells and development of novel tools using the robotic platform including such areas as gene editing and differentiation. In addition he oversees a number of collaborative projects aimed at developing research across a range of disease areas as well as facilitating relationships with other researchers in order to harness the power of the NYSCF Global Stem Cell Array Team. He received his PhD from University College London, England.

## **HIROMITSU NAKAUCHI, MD, PHD**

Hiro Nakauchi, MD, PhD, professor of genetics joined the faculty at Stanford University in February 2014. After earning medical degree from Yokohama City University School of Medicine and a PhD in immunology from the University of Tokyo Graduate School of Medicine, he came to Stanford as a postdoctoral scholar in the laboratory of the late Prof. Leonard Herzenberg. While at Stanford, he isolated CD8 genes that encode critically important molecules for immune cells to recognize virus infected or cancer cells. After returning to Japan, he started working on hematopoietic stem cells in his laboratory at RIKEN Life Science Research Center. In 1994, he became a full Professor of Immunology at the University of Tsukuba where he demonstrated that a single hematopoietic stem cell could reconstitute the entire hematopoietic system, a definitive experimental proof for the “stemness”. Since April 2002, he has been a Professor of Stem Cell Therapy in the Institute of Medical Science at The University of Tokyo (IMSUT). In 2008, he was appointed Director of newly established Center for Stem Cell Biology and Regenerative Medicine at IMSUT. He returned to Stanford University as a faculty to continue his stem cell research at the Institute of Stem Cell Biology and Regenerative Medicine. Goals of his work are to translate discoveries in basic research into practical medical applications.

## **TERUO FUJII, PHD**

Teruo Fujii, PhD is Professor and currently the Director General of Institute of Industrial Science (IIS), the University of Tokyo (UTokyo). He has a long-standing interest in the use of microfluidic technologies in cell engineering including new methods for stem cell differentiation and its analysis at the single-cell level. One of his works along these lines aimed at realization of a microfluidic device to form a new nerve organoids with a bundle of axons, which could be used as models of neurodegenerative diseases for drug discovery. He and his team have also developed a unique microfluidic method for single cell analysis with a very high capture rate (90% or more). Thanks to its highly efficient trapping, the method can be applied even to rare cell analysis as well as clinical samples from patients.

The Institute of Industrial Science, University of Tokyo,  
The Institute of Medical Science, University of Tokyo,  
& The New York Stem Cell Foundation Research Institute  
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The Tokyo – New York Stem Cell Summit is a meeting organized between The New York Stem Cell Foundation (NYSCF) and The University of Tokyo, to enhance the field of stem cell research globally.