

The 16th International Symposium of the Institute Network for Biomedical Sciences
KEY FORUM 2021 International Symposium

The Front Lines of Biomedical Research on the Nervous System

Institute of Molecular Embryology and Genetics, Kumamoto University

November 11-12, 2021

Kumamoto University, Japan

Thursday, November 11, 2021

13:00 - 13:05 **Opening Remarks**
Hitoshi Niwa (Director of Institute of Molecular Embryology and Genetics, Kumamoto University)

Session 1: Medical Sciences

Chair: Kei-ichiro Ishiguro (Institute of Molecular Embryology and Genetics, Kumamoto University)

13:05-13:25 S-01: **Madoka Suzuki** (Institute for Protein Research, Osaka University)
Intracellular heat diffusion acting behind thermogenesis

13:25-13:45 S-02: **Asako Shindo** (Institute of Molecular Embryology and Genetics, Kumamoto University)
Nutritional control of thyroid morphogenesis through gastrointestinal hormones

13:45-14:05 S-03: **Katsumori Segawa** (Medical Research Institute, Tokyo Medical and Dental University)
Physiology and pathology of phospholipid flippases in the plasma membrane

14:05-14:17 O-01: **Eiji Hara** (Research Institute for Microbial Diseases, Osaka University)
Identification of gut bacteria abundant in CRC patients that promote tumorigenesis

14:17-14:29 O-02: **Takahiro Eguchi** (The Institute of Medical Science, The University of Tokyo)
A study of therapeutic interventions aimed at enhancing neuromuscular junction innervation and skeletal muscle mass

14:29-14:41 O-03: **Tomohiko Okazaki** (Institute for Genetic Medicine, Hokkaido University)
Selective regulation of type I interferon and apoptosis and its relevance to brain protection against viral infection

14:41-14:55 **Break**

Session 2: Molecules and Omics

Chair: Ryuichi Nishinakamura (Institute of Molecular Embryology and Genetics, Kumamoto University)

14:55-15:07 O-04: **Keita Iida** (Institute for Protein Research, Osaka University)
Mathematical and semiological approach to single-cell and spatial transcriptomics

- 15:07-15:27 S-04: **Shinpei Kawaoka** (Institute of Development, Aging and Cancer, Tohoku University)
Understanding host pathophysiology in cancers using multi-omics and genetics
- 15:27-15:39 O-05: **Shusaku Abe** (Medical Institute of Bioregulation, Kyushu University)
Reprogramming of the histone H3.3 landscape in the early mouse embryo
- 15:39-15:51 O-06: **Kazuhiro Murakami** (Cancer Research Institute of Kanazawa University)
A Genome-Scale CRISPR screen reveals novel factors regulating Wnt-dependent renewal of mouse gastric epithelial cells
- 15:51-16:11 S-05: **Tomohide Saio** (Institute of Advanced Medical Sciences, Tokushima University)
Mechanistic insight into chaperone-mediated protein homeostasis
- 16:11-16:23 O-07: **Tomoaki Koga** (Institute of Molecular Embryology and Genetics, Kumamoto University)
Epigenetic regulation of inflammatory myeloid cells

Short-talk Session 1

- 16:23-16:31 Y-01: **Sweksha Lohani** (Research Institute for Microbial Diseases, Osaka University)
PRL-driven apoptosis induction in confluent epithelium regulates epithelial cell density
- 16:31-16:39 Y-02: **Tatsuya Suzuki** (Research Institute for Microbial Diseases, Osaka University)
Innate Immunity is required for pathogenicity of Flavivirus infection.
- 16:39-17:00 **Break**

KEY FORUM part 1

*Chairs: Kenji Shimamura (Institute of Molecular Embryology and Genetics, Kumamoto University)
Norifumi Shioda (Institute of Molecular Embryology and Genetics, Kumamoto University)*

- 17:00-17:30 K-01: **Ki-Jun Yoon** (Kaist, Korea)
Deciphering the Neural Epitranscriptome: The Roles of m⁶A RNA Modification in Neurodevelopment
- 17:30-18:00 K-02: **Fumio Matsuzaki** (RIKEN Center for Biosystems Dynamics Research)
Generation of the complex brains in mammalian evolution: a developmental point of view
- 18:00-18:30 K-03: **Pierre Vanderhaegen** (VIB KULeuven Center for Brain & Disease Research, Belgium)
Human-specific temporal mechanisms of brain development

Friday, November 12, 2021

Session 3: Cellular and Metabolic Topics

Chair: Akira Nakamura (Institute of Molecular Embryology and Genetics, Kumamoto University)

- 9:00-9:20 S-06: **Takashi Nishimiura** (Institute for Molecular and Cellular Regulation, Gunma University)
Regulation of brain insulin signaling in *Drosophila*
- 9:20-9:40 S-07: **Takayuki Nojima** (Medical Institute of Bioregulation, Kyushu University)
Mechanism of Co-transcriptional RNA splicing
- 9:40-10:00 S-08: **Eishu Hirata** (Cancer Research Institute of Kanazawa University)
Multifaceted interactions between cancer cells and glial cells in brain metastasis
- 10:00-10:12 O-08: **Hiroki Sekine** (Institute of Development, Aging and Cancer, Tohoku University)
Chronic hypoxia enhances proinflammatory response of macrophages by inhibiting lysosomal activity
- 10:12-10:24 O-09: **Mayumi Yamada** (Institute for Frontier Life and Medical Sciences, Kyoto University)
Analysis of neural stem cell regulatory mechanisms using optogenetics
- 10:24-10:36 O-10: **Yuhkoh Satouh** (Institute for Molecular and Cellular Regulation, Gunma University)
Clathrin-mediated endocytosis is essential for the selective degradation of maternal membrane proteins and preimplantation development
- 10:36-10:48 O-11: **Masahiro Shimizu** (Medical Research Institute, Tokyo Medical and Dental University)
WNK regulates Wnt signaling and β -Catenin levels by interfering with the interaction between β -Catenin and GID
- 10:48-11:00 **Break**

Short-talk Session 2

- 11:00-11:08 Y-03: **Zhe Wang** (Institute for Frontier Life and Medical Sciences, Kyoto University)
Hydrogel for precise manipulation of human pluripotent stem cells microenvironment
- 11:08-11:16 Y-04: **Jindan Sheng** (Cancer Research Institute of Kanazawa University)
Treatment of RB1-intact cancers with CDK4/6 inhibitor combination therapy
- 11:16-11:24 Y-05: **Kazufumi Kunimura** (Medical Institute of Bioregulation, Kyushu University)
The molecular basis for IL-31 production and IL-31-mediated itch transmission: from biology to drug development

- 11:24-11:32 Y-06: **Shin Fujimaki** (Institute of Molecular Embryology and Genetics, Kumamoto University)
Endothelial–muscular axis regulates skeletal muscle mass
- 11:32-11:40 Y-07: **Ryota Inoue** (Institute for Molecular and Cellular Regulation, Gunma University)
Uncoupling protein 2 and aldolase B impacts insulin release by modulating mitochondrial function and store-operated Ca²⁺ entry in type 2 diabetes
- 11:40-11:48 Y-08: **Ryotaro Tsutsumi** (Institute for Protein Research, Osaka University)
Elucidation of the molecular and pathological mechanisms of ciliopathies using the new model mouse generated by genome editing technology
- 11:48-13:10 **Group photo shooting**
Lunch
Steering Committee Meeting (Members Only)

KEY FORUM part 2

Chairs: Kenji Shimamura (Institute of Molecular Embryology and Genetics, Kumamoto University)
Norifumi Shioda (Institute of Molecular Embryology and Genetics, Kumamoto University)

- 13:10-13:40 K-04: **Hideyuki Okano** (Keio University School of Medicine)
iPS cells-based Modelling of Neural Development and Diseases

Short-talk Session 3

- 13:40-13:48 Y-09: **Nobutaka Numoto** (Medical Research Institute, Tokyo Medical and Dental University)
Molecular mechanism of lupus-related self-antigen recognition by B cell inhibitory co-receptor CD72
- 13:48-13:56 Y-10: **Tomohiro Yabushita** (The Institute of Medical Science, The University of Tokyo)
Genome-wide CRISPR activation screen identifies multiple clinically actionable resistance mechanisms with DNA-hypomethylating agents in myeloid malignancies.
- 13:56-14:04 Y-11: **Yingxu Liu** (Institute of Development, Aging and Cancer, Tohoku University)
Altruistic Social Activity Impacts on Depressive Symptoms and Brain Regional Gray Matter Volume: Voxel-Based Morphometry Analysis from 8695 Old Adults
- 14:04-14:12 Y-12: **Honoka Kawamukai** (The Institute of Medical Science, Tokushima University)
PR_n inhibits the binding of KapB2 to FUS
- 14:12-14:20 Y-13: **Yuki Tanaka** (Institute for Genetic Medicine, Hokkaido University)
Metabolite NTP1 suppresses CNS inflammation via pathogenic T cell activation
- 14:20-14:35 **Break**

Session 4: Technology, SARS CoV

Chair: *Minetaro Ogawa (Institute of Molecular Embryology and Genetics, Kumamoto University)*

- 14:35-14:55 S-09: **Toshio Kitamura** (The Institute of Medical Science, The University of Tokyo)
Development of a G0 marker and its application in studying stem cell including cancer stem cells
- 14:55-15:15 S-10: **Keizo Tomonaga** (Institute for Frontier Life and Medical Sciences, Kyoto University)
A novel intranuclear RNA vector system targeting stem cells and the central nervous system
- 15:15-15:35 S-11: **Tokiko Watanabe** (Research Institute for Microbial Diseases, Osaka University)
A strategy for virus survival: the genetic diversity of SARS-CoV-2
- 15:35-15:55 S-12: **Akinori Takaoka** (Institute for Genetic Medicine, Hokkaido University)
Innate sensing mechanism for SARS-CoV-2 infection in human lung cells
- 15:55-16:07 O-12: **Harunori Yoshikawa** (Institute of Advanced Medical Sciences, Tokushima University)
Efficient analysis of translation-active ribosomes in cells and tissues
- 16:07-16:30 **Short-talk Awards Ceremony & Break**

KEY FORUM part 3

Chairs: *Kenji Shimamura (Institute of Molecular Embryology and Genetics, Kumamoto University)*

Norifumi Shioda (Institute of Molecular Embryology and Genetics, Kumamoto University)

- 16:30-17:00 K-05: **Kumi Kuroda** (RIKEN Center for Brain Science)
Preoptic signaling as a critical node of affiliative social behaviors in mammals
- 17:00-17:30 K-06: **Denis Jabaudon** (University of Geneva)
Temporal controls over inter-areal cortical projection neuron fate diversity
- 17:30-18:00 K-07: **Ryoichiro Kageyama** (Institute for Frontier Life and Medical Sciences, Kyoto University, RIKEN Center for Brain Science)
Dynamic transcriptional control regulates active versus quiescent neural stem cells
- 18:00-18:05 **Closing Remarks**
Kenji Shimamura (Institute of Molecular Embryology and Genetics, Kumamoto University)