

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** (Department of Basic Neurosciences, University of Geneva, Switzerland)
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)