
The 13th International Symposium of the Institute Network for Biomedical Sciences joint with the 3rd Symposium of the Inter-University Research Network for Trans-Omics Medicine and the 28th Hot Spring Harbor Symposium

Biomedical Sciences in the Era of Big Data

Medical Institute of Bioregulation, Kyushu University

October 18 - 19, 2018

Main Hall, Centennial Hall Kyushu University School of Medicine
in the Hospital Campus of Kyushu University, Fukuoka

Thursday, October 18, 2018

09:30 - 09:35 Opening Remarks:
Yusaku Nakabeppu (Director of Medical Institute of Bioregulation, Kyushu University)

Session 1: Epigenetics

*Chairs: Mitsuyoshi Nakao (Institute of Molecular Embryology and Genetics, Kumamoto University)
Hiroyuki Sasaki (Medical Institute of Bioregulation, Kyushu University)*

09:35-10:00 S-01: **Toyomasa Katagiri** (Institute of Advanced Medical Sciences, Tokushima University)
Comprehensive molecular features of triple negative breast cancers

10:00-10:15 Y-01: **Norifumi Shioda** (Institute of Molecular Embryology and Genetics, Kumamoto University)
G-quadruplexes as a therapeutic target for ATR-X syndrome

10:15-10:40 S-02: **Takeshi Inagaki** (Institute for Molecular and Cellular Regulation, Gunma University)
Epigenetic regulation of adipocyte function

10:40-10:55 Y-02: **Sumiyo Morita** (Institute for Molecular and Cellular Regulation, Gunma University)
Epigenome editing: Manipulating DNA methylation of specific DNA loci using CRISPR/Cas9 and a repeating peptide array- based amplification.

10:55-11:10 Y-03: **Kazumitsu Maehara** (Medical Institute of Bioregulation, Kyushu University)
Low-input Epigenomic Profiling Technology Toward the Identification of Myogenic Chromatin Structure

11:10-11:25 Coffee break

Special Lecture 1

Chair: Yasuyuki Ohkawa (Medical Institute of Bioregulation, Kyushu University)

- 11:25-12:05 **Suhas Rao** (Stanford University, USA)
Cohesin Loss Eliminates All Loop Domains
- 12:05-12:15 Photo Session
- 12:15-13:15 Lunch / Steering Committee Meeting of Institute Network for Biomedical Sciences
(members only)
- 13:15-14:15 Poster Session-1

Session 2: Cancer and immune system

Chairs: Sho Yamasaki (Research Institute for Microbial Diseases, Osaka University)

Yoshihiro Baba (Medical Institute of Bioregulation, Kyushu University)

- 14:15-14:40 S-03: **Toru Kondo** (Institute for Genetic Medicine, Hokkaido University)
A novel tumor suppressor Ecr4 acts as an immunosurveillance factor
- 14:40-15:05 S-04: **Seiya Imoto** (Institute of Medical Science, The University of Tokyo)
Immuno-genomic pancancer landscape reveals diverse immune escape mechanisms
and immuno-editing histories
- 15:05-15:30 S-05: **Shumpei Ishikawa** (Medical Research Institute, Tokyo Medical and Dental
University)
Genomic and Immunogenomics of Diffuse-type Gastric Carcinoma
- 15:30-15:45 Coffee break

Special Lecture 2

Chair: Mikita Suyama (Medical Institute of Bioregulation, Kyushu University)

- 15:45-16:25 **Peer Bork** (European Molecular Biology Laboratory, Germany)
Systemic analysis of the human gut microbiome and beyond

Session 3: Structure and drug discover

Chairs: Toshifumi Takao (Institute for Protein Research, Osaka University)

Daisuke Kohda (Medical Institute of Bioregulation, Kyushu University)

- 16:25-16:50 S-06: **Daron M. Standley** (Research Institute for Microbial Diseases, Osaka University)
High-throughput modeling of lymphocyte receptors and their antigens
- 16:50-17:05 Y-04: **Yusuke Kato** (Institute of Advanced Medical Sciences, Tokushima University)
Combined approach of computation and enzymology to investigate novel D-amino acid oxidase inhibitors
- 17:05-17:20 Y-05: **Toshiki Takei** (Institute for Protein Research, Osaka University)
Development and Application of One-Pot Four-Segment Ligation Method Using Selenoester: Chemical synthesis of Superoxide Dismutase
- 17:20-18:20 Poster Session-2
- 18:20-18:30 Break
- 18:30-20:30 Mixer

Friday, October 19, 2018

Session 4: Germ cells and stem cells

*Chairs: Tatsuya Takemoto (Institute of Advanced Medical Sciences, Tokushima University)
Atsushi Suzuki (Medical Institute of Bioregulation, Kyushu University)*

- 09:00-09:25 S-07: **Kei-ichiro Ishiguro** (Institute of Molecular Embryology and Genetics, Kumamoto University)
A novel germ cell-specific factor, MEIOSIN, recruits STRA8 to direct initiation of meiosis in mammals
- 09:25-09:40 Y-06: **Yohei Hayashi** (Institute of Development, Aging and Cancer, Tohoku University)
Biological significance of metabolic shift in mouse germline differentiation
- 09:40-10:05 S-08: **Chiaki Takahashi** (Cancer Research Institute, Kanazawa University)
RB controls undifferentiated status through positive regulation of phosphoglycerate mutases
- 10:05-10:30 S-09: **Junya Toguchida** (Institute for Frontier Life and Medical Sciences, Kyoto University)
Application of iPS cells for disease modeling and drug discovery
- 10:30-10:45 Coffee break

Special Lecture 3

Chair: Yusaku Nakabeppu (Medical Institute of Bioregulation, Kyushu University)

- 10:45-11:25 **Rachel Rosenthal** (University College London, UK)
Cancer evolution and immune escape: TRACERx

Session 5: Cell biology

*Chairs: Ken Sato (Institute for Molecular and Cellular Regulation, Gunma University)
Keiichi Nakayama (Medical Institute of Bioregulation, Kyushu University)*

- 11:25-11:40 Y-07: **Tomohiro Yamazaki** (Institute for Genetic Medicine, Hokkaido University)
Functional domains of NEAT1 architectural lncRNA induce paraspeckle assembly through phase separation
- 11:40-12:05 S-10: **Takahisa Furukawa** (Institute for Protein Research, Osaka University)
Molecular control of light-dark adaptation in retinal photoreceptor cells

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- 12:05-12:20 Y-08: **Kohsuke Tsuchiya** (Cancer Research Institute, Kanazawa University)
Caspase-1 can initiate two different forms of cell death, pyroptosis and apoptosis,
depending on the signaling context
- 12:20-13:20 Lunch / Steering Committee Meeting of Inter-University Research Network for
Trans-Omics Medicine (members only)

Session 6: Immunology

*Chairs: Koichi Ikuta (Institute for Frontier Life and Medical Sciences, Kyoto University)
Yoshinori Fukui (Medical Institute of Bioregulation, Kyushu University)*

- 13:20-13:45 S-11: **Kouetsu Ogasawara** (Institute of Development, Aging and Cancer, Tohoku
University)
Identification of pathogenic T cells in metal allergy
- 13:45-14:00 Y-09: **Fumiji Saito** (Research Institute for Microbial Diseases, Osaka University)
Immune evasion of *Plasmodium falciparum* by RIFIN via inhibitory receptors
- 14:00-14:15 Y-10: **Jun-ichirou Yasunaga** (Institute for Frontier Life and Medical Sciences,
Kyoto University)
Molecular mechanisms of oncogenesis by human T-cell leukemia virus type 1
- 14:15-14:30 Coffee break

Session 7: Cancer and Genetic disorders

*Chairs: Kozo Tanaka (Institute of Development, Aging and Cancer, Tohoku University)
Hiroyuki Kubota (Medical Institute of Bioregulation, Kyushu University)*

- 14:30-14:55 S-12: **Mikita Suyama** (Medical Institute of Bioregulation, Kyushu University)
Understanding gene regulation using chromosome conformation and epigenomic
data
- 14:55-15:10 Y-11: **Fuyuki Miya** (Medical Research Institute, Tokyo Medical and Dental
University)
Beyond the limitations of exome analysis for genetic disorders
- 15:10-15:25 Y-12: **Kiyoshi Yamaguchi** (Institute of Medical Science, The University of Tokyo)
Molecular features of colorectal cancer in patient with polymerase
proofreading-associated polyposis

15:25-15:40 Early Career Investigator Award Ceremony

15:40-15:45 Closing Remarks:
Mikita Suyama (Medical Institute of Bioregulation, Kyushu University)

Poster Presentation

Category 1: Cancer

- P-1 Analysis of calcium wave in epithelial homeostasis
Yasuto Takeuchi (Institute for Genetic Medicine, Hokkaido University)
- P-2 NRF2-NOTCH3 Axis Promotes Stem-like Phenotype of *KEAP1*-mutant Non-small Cell Lung Cancers
Keito Okazaki (Institute of Development, Aging and Cancer, Tohoku University)
- P-3 Role for efficient chromosome alignment in equal chromosome segregation
Kinue Kuniyasu (Institute of Development, Aging and Cancer, Tohoku University)
- P-4 Residual circulating tumor DNA status in relapse prediction post allogeneic hematopoietic stem cell transplantation
Sousuke Nakamura (Institute of Medical Science, The University of Tokyo)
- P-5 Sulfated-glycosaminoglycans as Major Humoral Tumor-antigens Identified by Immunogenetic Repertoire Profiling for Gastric Cancers
Hiroto Katoh (Medical Research Institute, Tokyo Medical and Dental University)
- P-6 The role of transcription factor Gli1 in maintaining invasive phenotype of melanoma
I- Ketut Gunarta (Cancer Research Institute, Kanazawa University)
- P-7 Involvement of aberrant GSK3 β in tumor-promoting autophagy in colorectal cancer
Takahiro Domoto (Cancer Research Institute, Kanazawa University)
- P-8 Active B cell division on plasma cell niche is required for lymphoma development
Tomoharu Yasuda (Medical Institute of Bioregulation, Kyushu University)
- P-9 Application of Pluripotent Stem Cells for In Vitro Sarcomagenesis
Sakura Tamaki (Institute for Frontier Life and Medical Sciences, Kyoto University)
- P-10 Pan-cancer analysis of intratumor heterogeneity associated with patient prognosis using multidimensional measures
Chie Kikutake (Medical Institute of Bioregulation, Kyushu University)

Category 2: Molecular mechanisms and techniques

- P-11 Alternative autophagy pathways conserved from yeast to mammals
Satoko Arakawa (Medical Research Institute, Tokyo Medical and Dental University)
- P-12 Neuronal SIRT1 regulates simple sugar selection through FGF21 and oxytocin signalling in mice
Sho Matsui (Institute for Molecular and Cellular Regulation, Gunma University)
- P-13 Synthetic Study of D-Ferredoxin-1
Yusuke Ishida (Institute for Protein Research, Osaka University)
- P-14 Development of an analytical system for single-cell metabolomics based on high-sensitive nano-LC/MS/MS
Kohta Nakatani (Medical Institute of Bioregulation, Kyushu University)

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- P-15 Sperm-borne phospholipase C zeta-1 ensures monospermic fertilization in mice
Yuhkoh Satoh (Research Institute for Microbial Diseases, Osaka University)
- P-16 TRANSOMICS: Integrated Analysis Through Multiple Molecular Layers
Fumiko Matsuzaki (Medical Institute of Bioregulation, Kyushu University)
- P-17 Omics approaches in peroxisome biogenesis and human disorders
Kanji Okumoto (Medical Institute of Bioregulation, Kyushu University)
- P-18 Integrative approach combining electron microscopy and high-speed AFM revealed the dynamic conformational exchange of the oligosaccharyltransferase in lipid bilayers
Yuki Kawasaki (Medical Institute of Bioregulation, Kyushu University)

Category 3: Inflammation

- P-19 Skeletal abnormalities in mice with constitutively activated MDA5
Nobumasa Soda (Institute for Frontier Life and Medical Sciences, Kyoto University)
- P-20 A novel mechanism for induction of tissue-specific immune evasion
Tetsuya Sakurai (Medical Institute of Bioregulation, Kyushu University)

Category 4: Development and stem cell

- P-21 The effect of maternal diet and nutritional status on mammalian sex determination
Shingo Miyawaki (Institute of Advanced Medical Sciences, Tokushima University)
- P-22 Expansion of human iPS-derived nephron progenitors and modeling nephrotic disease
Shunsuke Tanigawa (Institute of Molecular Embryology and Genetics, Kumamoto University)
- P-23 Identification of transcription factors repressing direct conversion of mouse embryonic fibroblasts into induced hepatocyte-like cells
Masayoshi Yorino (Medical Institute of Bioregulation, Kyushu University)
- P-24 Mammalian Dmrt factors orchestrate cerebral cortical development *via* regional control of neural progenitor identity
Dai-jiro Konno (Medical Institute of Bioregulation, Kyushu University)

Category 5: Genome science

- P-25 Accurate and Robust Base-calling for Nanopore Raw Reads with Variation of Species Exploiting Neural Machine Translation Model
Hiroki Konishi (Institute of Medical Science, The University of Tokyo)
- P-26 Elucidation of roles of the linear form of chromosomes in eukaryotes
Ami Takeuchi (Institute for Protein Research, Osaka University)
- P-27 *Ddhd1* knockout mice as a model system of hereditary spastic paraplegia
Takuya Morikawa (Medical Institute of Bioregulation, Kyushu University)

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- P-28 HLA controls clinical conversion of Hashimoto Thyroiditis to Graves Disease
Xin Tun (Medical Institute of Bioregulation, Kyushu University)

Category 6: Degenerative disorders

- P-29 Impact of HPGCD administration into the cerebral ventricle for Niemann-Pick disease type C
Minami Soga (Institute of Molecular Embryology and Genetics, Kumamoto University)
- P-30 G-quadruplexes as a therapeutic target for ATR-X syndrome
Norifumi Shioda (Institute of Molecular Embryology and Genetics, Kumamoto University)
- P-31 ICF syndrome proteins CDCA7 and HELLS promote non-homologous end joining
Motoko Unoki (Medical Institute of Bioregulation, Kyushu University)

Category 7: Others

- P-32 Immune evasion of *Plasmodium falciparum* by RIFIN via inhibitory receptor
Fumiji Saito (Research Institute for Microbial Diseases, Osaka University)
- P-33 Overproduction of ATP and Reactive Oxygen Species in Mitochondria by Excessive Magnesium
Osamu Hashizume (Research Institute for Microbial Diseases, Osaka University)
- P-34 Molecular mechanisms of oncogenesis by human T-cell leukemia virus type 1
Jun-ichirou Yasunaga (Institute for Frontier Life and Medical Sciences, Kyoto University)
- P-35 Molecular features of colorectal cancer in patient with polymerase proofreading-associated polyposis
Kiyoshi Yamaguchi (Institute of Medical Science, The University of Tokyo)
- P-36 Epigenome editing: Manipulating DNA methylation of specific DNA loci using CRISPR/Cas9 and a repeating peptide array-based amplification
Sumiyo Morita (Institute for Molecular and Cellular Regulation, Gunma University)
- P-37 Beyond the limitations of exome analysis for genetic disorders
Fuyuki Miya (Medical Research Institute, Tokyo Medical and Dental University)
- P-38 Low-input Epigenomic Profiling Technology Toward the Identification of Myogenic Chromatin Structure
Kazumitsu Maehara (Medical Institute of Bioregulation, Kyushu University)
- P-39 Caspase-1 can initiate two different forms of cell death, pyroptosis and apoptosis, depending on the signaling context
Kohsuke Tsuchiya (Cancer Research Institute, Kanazawa University)
- P-40 Neural stem cell-specific *Itpa* knockout mouse as a model of human epileptic encephalopathy caused by ITPA deficiency
Daisuke Tsuchimoto (Medical Institute of Bioregulation, Kyushu University)
- P-41 Oligodendrocyte dysfunction due to *Chd8* mutation shapes the core autistic phenotypes in mice
Atsuki Kawamura (Medical Institute of Bioregulation, Kyushu University)
- P-42 Biological significance of metabolic shift in mouse germline differentiation
Yohei Hayashi (Institute of Development, Aging and Cancer, Tohoku University)

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- P-43 Functional domains of NEAT1 architectural lncRNA induce paraspeckle assembly through phase separation
Tomohiro Yamazaki (Institute for Genetic Medicine, Hokkaido University)
- P-44 Combined approach of computation and enzymology to investigate novel D-amino acid oxidase inhibitors
Yusuke Kato (Institute of Advanced Medical Sciences, Tokushima University)
- P-45 Development and Application of One-Pot Four-Segment Ligation Method Using Selenoester: Chemical Synthesis of Superoxide Dismutase
Toshiki Takei (Institute for Protein Research, Osaka University)