

シンポジウム

第1日目12月1日(水)

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| 1AS-01 | Room 01 (Pacifco Yokohama Conference Center, 1F, Main Hall) | 9:00-11:15 [E] |
| 'Messenger' RNA: Drug Target and Vaccine | | |
| Organizers : Akila Mayeda (Fujita Health University) Adrian R. Krainer (Cold Spring Harbor Laboratory) | | |
| 1AS-01-Introduction | | [9:00] |
| Adrian Krainer (Cold Spring Harbor Lab.) | | |
| 1AS-01-1 | | [9:10] |
| Development of new generation vaccines using nucleoside-modified mRNA | | |
| Norbert Pardi (Perelman Sch. of Med., Univ. of Pennsylvania) | | |
| 1AS-01-2 | | [9:35] |
| Pyrrole-Imidazole Polyamides as artificial genetic switches | | |
| Hiroschi Sugiyama (Dept. of Chem., Grad. Sch. of Sci., Kyoto Univ.) | | |
| 1AS-01-3 | | [9:50] |
| Boosted tumor immunogenicity by splicing modulation potentiates the response to immune checkpoint therapy | | |
| Shingo Matsushima ¹ , Masahiko Ajiro ¹ , Kenji Chamoto ² , Tasuku Honjo ² , Masatoshi Hagiwara ¹ (¹ Dept. of Anat. & Dev. Biol., Grad. Sch. of Med., Kyoto Univ., ² Dept. of Immun. & Genomic Med., Grad. Sch. of Med., Kyoto Univ.) | | |
| 1AS-01-4 | | [10:05] |
| Sequence-based design of small molecules targeting RNA structures to manipulate and study disease biology | | |
| Matthew D. Disney (Dept. of Chem., Scripps Research) | | |
| 1AS-01-5 | | [10:30] |
| A small molecule targeting UGGAA pentanucleotide repeats that cause spinocerebellar ataxia type 31 | | |
| Tomonori Shibata ¹ , Konami Nagano ² , Morio Ueyama ³ , Kensuke Ninomiya ⁴ , Tetsuro Hirose ⁴ , Yoshitaka Nagai ³ , Kinya Ishikawa ⁵ , Gota Kawai ² , Kazuhiko Nakatani ¹ (¹ SANKEN, Osaka Univ., ² Fac. of Eng., Chiba Inst. of Tech., ³ Sch. of Med., KINDAI Univ., ⁴ FBS, Osaka Univ., ⁵ Tokyo Med. & Dent. Univ.) | | |
| 1AS-01-6 | | [10:45] |
| Splice-switching antisense oligonucleotide therapeutics for neurological conditions | | |
| Adrian R. Krainer (Cold Spring Harbor Lab.) | | |
| 1AS-01-Conclusion | | [11:10] |
| Akila Mayeda (Fujita Health University) | | |
| 1AS-02 | Room 02 (Pacifco Yokohama Conference Center, 3F, 301) | 9:00-11:15 [E] |
| Co-hosted by: A new foundation for primate developmental biology | | |
| Toward a new era for primate developmental biology | | |
| Organizers : Tomonori Nakamura (Kyoto University) Yasuhiro Takashima (Kyoto University) | | |
| 1AS-02-Introduction | | [9:00] |
| Tomonori Nakamura (Kyoto University) | | |
| 1AS-02-1 | | [9:02] |
| A developmental coordinate of three-germ layer differentiation in primates | | |
| Tomonori Nakamura ^{1,2} (¹ WPI-ASHBi, Kyoto-U, ² Hakubi, Kyoto-U) | | |
| 1AS-02-2 | | [9:20] |
| Cell Competition Constitutes a Barrier for Interspecies Chimerism | | |
| Jun Wu ^{1,2} (¹ Department of Molecular Biology, University of Texas Southwestern Medical Center, ² Hamon Center for Regenerative Science and Medicine, University of Texas Southwestern Medical Center) | | |
| 1AS-02-3 | | [9:50] |
| Generation of transgenic cynomolgus monkeys using piggyBac transposition | | |
| Tomoyuki Tsukiyama ^{1,2} (¹ Shiga Univ. of Medical Science, ² ASHBi, Kyoto University) | | |
| 1AS-02-4 | | [10:08] |
| Genomic and epigenomic integrity controls during primate male germ cell development | | |
| Toshiaki Watanabe (CIEA · marmoset) | | |

1AS-02-5 [10:26]

Extrinsic factors promoting cortical expansion in primates

Jun Hatakeyama, Haruka Sato, Kenji Shimamura (IMEG, Kumamoto Univ.)

1AS-02-6 [10:56]

Modeling in vitro embryonic development using naive pluripotent stem cells

Yasuhiro Takashima (Kyoto Univ. CiRA)

1AS-02-Conclusion [11:14]

Yasuhiro Takashima (Kyoto University)

1AS-03 Room 03 (Pacifco Yokohama Conference Center, 3F, 302) 9:00-11:15 [E]

Mitochondria link higher-ordered biological functions and medical sciences

Organizers : Naotada Ishihara (Osaka University)
Kazuto Nakada (University of Tsukuba)

1AS-03-Introduction [9:00]

Naotada Ishihara (Osaka University)

1AS-03-1 [9:05]

Mitochondrial dynamics in immunity, metabolism, differentiation, and ageing

Takaya Ishihara, Emi Ogasawara, Tatsuki Yasuda, Yuki Hanada, Naotada Ishihara (Dept. of Biol. Sci., Grad. Sch. of Sci. Osaka Univ.)

1AS-03-2 [9:30]

Mitochondrial tRNA modification and mitochondrial disease

Fanyan Wei (Dept. Modomics, IDAC, Tohoku Univ.)

1AS-03-3 [9:55]

Improvement of C. elegans sarcopenia and muscular dystrophy by suppressing mitochondrial Ca²⁺ influx

Atsushi Higashitani¹, Mika Teranishi¹, Takaaki Abe², Yukihiko Kubota³, Takeshi Kobayashi⁴(¹Grad. Sch. of Life Sci., Tohoku Univ.,
²Grad. Sch. of Bioeng. / Med. Tohoku Univ., ³Coll. of Life Sci, Ritsumeikan Univ, ⁴Grad. Sch. of Med. Nagoya Univ.)

1AS-03-4 [10:20]

Generation and characterization of novel *trans*-mitochondrial mice carrying a pathogenic mtDNA mutation

Haruna Tani^{1,2}, Kaori Ishikawa^{1,3}, Hiroaki Tamashiro¹, Emi Ogasawara⁴, Fan-Yan Wei², Takehiro Yasukawa^{5,6}, Shigeru Matsuda^{2,5},
Akinori Shimizu⁷, Dongchon Kang⁵, Jun-Ichi Hayashi⁸, Kazuto Nakada^{1,3}(¹Grad. Sch. Life and Env. Sci., Univ. of Tsukuba, ²Dept.
Modomics, IDAC, Tohoku Univ., ³Faculty of Life and Env. Sci, Univ. of Tsukuba, ⁴Dept. of Biol. Sci., Grad. Sch. of Sci., Osaka Univ.,
⁵Dept. CCLM, Kyushu Univ., ⁶Dept. of Path. and Onco., Facul. of Med., Juntendo Univ., ⁷Dept. of Microbiol. and Immunol., Sch. of Med.,
Fukuoka Univ. , ⁸TARA, Univ. of Tsukuba)

1AS-03-5 [10:45]

Topics on therapeutics for mitochondrial diseases

Yu-ichi Goto (Nat. Cent. of Neurol. Psychiat.)

1AS-03-Conclusion [11:10]

Kazuto Nakada (University of Tsukuba)

1AS-04 Room 04 (Pacifco Yokohama Conference Center, 3F, 303) 9:00-11:15 [E]

The common mechanism for regulation of genome maintenance by DNA structural dynamics

Organizers : Kazutoshi Kasho (Kyushu University)
Tutomu Katayama (Kyushu University)

1AS-04-Introduction [9:00]

Kazutoshi Kasho (Kyushu University)

1AS-04-1 [9:02]

Understanding eukaryotic DNA replication one molecule and one step at a time

Huilin Li (Van Andel Institute)

1AS-04-2 [9:26]

Dynamic nucleoprotein complexes and DNA structural changes supporting regulated replication initiation of the *Escherichia coli* chromosome

Tutomu Katayama¹, Kenya Miyoshi¹, Ryusei Yoshida¹, Chuyuan Lu¹, Lanyang Li¹, Kazuma Korogi¹, Yuka Tatsumoto¹, Kosuke Ito¹,
Hironori Kawakami^{1,2}, Kazutoshi Kasho¹, Shogo Ozaki¹(¹Dep. of Mol. Biol., Grad. Sch. of Pharm. Sci., Kyushu Univ., ²(Present) Fac. of
Pharm. Sci., Sanyo-Onoda City Univ.)

1AS-04-3 [9:47]**Association of Rif1 with nuclear membrane is essential for genome-wide replication timing regulation**

Tomohiro Iguchi¹, Sayuri Ito¹, Naoko Kakusho¹, Satoshi Yamazaki¹, Asami Oji², Rino Fukatsu¹, Ichiro Hiratani², Hiroyuki Sasanuma¹, Hisao Masai¹ (¹Genome Dynamics, Dept. of Basic Med. Sci., Tokyo Metro. Inst. Med. Sci., ²Lab. Develop. Epigen., RIKEN BDR)

1AS-04-4 [10:08]**Mitochondrial DNA replication stalling enhances G-quadruplexes formation in cultured human cells**

Sjoerd Wanrooij, Mara Doimo (Umeå University)

1AS-04-5 [10:32]**Possible mechanism of transcription-replication regulation at a replication origin of human mitochondrial DNA**

Takehiro Yasukawa¹, Shigeru Matsuda², Masunari Nakayama³, Takashi Ishiuchi⁴, Yura Do³, Kazuto Nakada⁵, Kenji Ichiyanagi⁶, Hiroyuki Sasaki⁴, Dongchon Kang³ (¹Dept. Pathol. Oncol., Sch. Med., Juntendo Univ., ²IDAC, Tohoku Univ., ³Dept. CCLM, Grad. Sch., Med., Kyushu Univ., ⁴Div. Epigen. Dev., Med. Inst. Bioreg, Kyushu Univ., ⁵Fac. Life Environ. Sci., Univ. of Tsukuba, ⁶Grad. Sch. Bioagri. Sci., Nagoya Univ.)

1AS-04-6 [10:53]**A novel regulatory mechanism of PrimPol-dependent mitochondrial genome maintenance by an unique multi-functional protein PoIDIP2**

Kazutoshi Kasho^{1,2}, Anais Lamy¹, Andreas Berner¹, Tran Nguyen¹, Gorazd Stojkovic¹, Cristina Velazquez-Ruiz³, Maria I. Martinez-Jimenez³, Mara Doimo¹, Timothee Laurent¹, Aldo E. Perez-Rivera³, Ronnie Berntsson¹, Luis Blanco³, Sjoerd Wanrooij¹ (¹Dept. of Med. Biochem. and Biophys., Umea Univ., ²Present address; Dept. of Mol. Biol., Grad. Sch. of Pharm. Sci., Kyushu Univ., ³Centro de Biología Molecular Severo Ochoa)

1AS-04-Conclusion [11:14]

Tsutomu Katayama (Kyushu University)

1AS-05 Room 05 (Pacifico Yokohama Conference Center, 3F, 304) 9:00-11:15 [E]**Brain functions enhanced by intercellular communication: new-found reciprocity of astrocytes and neurons**

Organizers : Nariko Arimura (National Center of Neurology and Psychiatry)
Tetsuya Takano (Keio University)

1AS-05-Introduction [9:00]

Nariko Arimura (National Center of Neurology and Psychiatry)

1AS-05-1 [9:03]**Molecular Interactions between Astrocytes and Purkinje Cells: Regulation of Synaptic Localization of GLAST and Synaptogenesis**

Nariko Arimura (Dept. of Biochem. & Cell. Biol., NCPP)

1AS-05-2 [9:23]**Manipulation tool developments to study behavioral consequences of astrocyte signaling in vivo**

Jun Nagai (RIKEN Center for Brain Science, Lab for Glia-Neuron Circuit Dynamics)

1AS-05-3 [9:48]**Astrocyte regulation of neuronal synapses**

Nicola J Allen (Salk Institute)

1AS-05-4 [10:18]**A specific cell-type interface proteomic approach Split-TurboID reveals astrocytic control of inhibition in vivo**

Tetsuya Takano (Department of Neurophysiology, Keio University School of Medicine)

1AS-05-5 [10:43]**Adult network remodeling by reactive astrocytes**

Schuichi Koizumi^{1,2} (¹Dept Neuropharmacol, Interdisc Grad Sch Med, Univ Yamanashi, ²Yamanashi GLIA Center, Univ Yamanashi)

1AS-05-Conclusion [11:13]

Tetsuya Takano (Keio University)

1AS-16 Room 16 (Pacifico Yokohama Conference Center, 5F, 502)

9:00-11:15 [E]

Co-hosted by: Grant-in Aid for Scientific Research on Innovative Area Replication of Non Genome

Chromosome, chromatin, and nuclear dynamics in sexual reproductionOrganizers : Kei-ichiro Ishiguro (Kumamoto University)
Satoshi Namekawa (University of California, Davis)

1AS-16-1

[9:00]

Polycomb establishes the oocyte epigenome to produce ovarian reserve

Satoshi Namekawa (Dept. of Mol. Genet. & Microbiol.)

1AS-16-2

[9:19]

Novel mRNA recognition and stability control mechanism essential for germ cell developmentMasashi Yamaji¹, Masataka Suzawa², Misaki Yamaji¹, Alexis Jacob², Wataru Horikawa¹, Byungil Kim³, Ascano Manuel³, Markus Hafner² (¹Div. Rep. Sci. & Human Gen., CCHMC, ²Lab. Mus. Stem Cells Gene Reg., NIH/NIAMS, ³Dept. Biochem., Sch. Med., Vanderbilt Univ.)

1AS-16-3

[9:38]

Identification of meiosis-required genes using CRISPR/Cas9 and their functional analysisSeiya Oura^{1,2}, Masahito Ikawa^{1,2,3} (¹Research Institute for Microbial Diseases, Osaka University, ² Graduate School of Pharmaceutical Sciences, Osaka University, ³The Institute of Medical Science, The University of Tokyo)

1AS-16-4

[9:57]

Sexually different mechanisms of meiotic cell cycle in mammalian germ cells

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

1AS-16-5

[10:16]

Investigation of human sperm chromatin heterogeneity and sperm quality using ATAC-seqYoshinori Makino¹, Masashi Hada¹, Satoshi Kaneko², Yuki Okada¹ (¹IQB, Univ. of Tokyo, ²Tokyo Dent. Col., Ichikawa Gen. Hosp.)

1AS-16-6

[10:35]

NANOS2-mediated cell cycle arrest as a first step of germ cell masculinizationYumiko Saga¹, Ryuki Shimada², Takamasa Hirano¹ (¹Mammalian Development Laboratory, National Institute of Genetics, ²Department of Chromosome Biology, Kumamoto University.)

1AS-16-7

[10:55]

Molecular network regulating the epigenetic program of mammalian oocytes

Hiroyuki Sasaki (Med. Inst. Bioreg., Kyushu Univ.)

1AS-17 Room 17 (Pacifico Yokohama Conference Center, 5F, 503)

9:00-11:15 [E]

Data science and machine learning: Tackling the Noise and Heterogeneity of the Real WorldOrganizers : Eiryu Kawakami (RIKEN)
Shinya Kuroda (The University of Tokyo)

1AS-17-Introduction

[9:00]

Eiryu Kawakami (RIKEN)

1AS-17-1

[9:02]

Methods for 3D reconstruction of histology sections at single-cell resolutionJosephine Galipon^{1,2,3} (¹Grad. Sch. of Media and Governance, Keio Univ., ²Inst. for Adv. Biosciences, Keio Univ., ³Neurosc. Inst., Grad. Sch. of Sci., Nagoya Univ.)

1AS-17-2

[9:24]

Introduction to tensor packages to handle heterogeneous and multi-dimensional data structures

Koki Tsuyuzaki (RIKEN)

1AS-17-3

[9:46]

Machine learning for molecular graph representations and geometriesIchigaku Takigawa^{1,2} (¹RIKEN AIP, ²WPI-ICReDD, Hokkaido Univ.)

1AS-17-4

[10:08]

Towards an Integrated Use of Medical Knowledge Representation and Clinical Real-World Data

Takeshi Imai (CDBIM, Grad. Sch. of Med., Univ. of Tokyo)

1AS-17-5 **[10:30]**

Comparative transomic analysis of glucose-responsive regulation of liver metabolism in obese ob/ob and wild-type mice

Toshiya Kokaji¹, Atsushi Hatano², Yuki Ito³, Katsuyuki Yugi^{4,5}, Miki Eto⁶, Keigo Morita⁶, Satoshi Ohno⁶, Masashi Fujii⁷, Ken-ichi Hironaka⁶, Riku Egami⁸, Akira Terakawa⁹, Takaho Tsuchiya^{9,10}, Haruka Ozaki^{9,10}, Hiroshi Inoue¹¹, Shinsuke Uda³, Hiroyuki Kubota³, Yutaka Suzuki⁸, Kazutaka Ikeda¹², Makoto Arita^{4,13,14}, Masaki Matsumoto², Keiichi I. Nakayama¹⁵, Akiyoshi Hirayama⁵, Tomoyoshi Soga⁵, Shinya Kuroda^{6,8} (¹Data Science Center, Nara Inst. of Sci. and Tech., ²Grad. Sch. of Med. and Dent., Niigata Univ., ³Center for Transomics Med., Med. Inst. of Bioreg., Kyusyu Univ., ⁴Div. of Disease Syst. Biol., RIKEN for Integrative Med. Sci., ⁵Inst. for Adv. Biosci., Keio Univ., ⁶Dept. of Biol. Sci., Grad. Sch. of Sci., Univ. of Tokyo, ⁷Dept. of Math. and Life Sci., Grad. Sch. of Integrated Sci. for Life, Hiroshima Univ., ⁸Dept. of Comp. Biol. and Med. Sci., Grad. Sch. of Frontier Sci., Univ. of Tokyo, ⁹Faculty of Med., Univ. of Tsukuba, ¹⁰Center for AI, Univ. of Tsukuba, ¹¹Innov. Integ. Bio. Core, Inst. for Front. Sci. Init. Kanazawa Univ., ¹²Clinic. Omics Unit, Kazusa DNA Research Inst., ¹³Grad. Sch. of Med. Life Sci., Yokohama City Univ., ¹⁴Faculty of Pharm., Keio Univ., ¹⁵Dept. of Mol. and Cell. Biol., Med. Inst. of Bioreg., Kyusyu Univ.)

1AS-17-6 **[10:52]**

Mathematical methods and machine learning meet real-world data to stratify patients and predict disease onset and prognosis

Tetsuo Ishikawa¹, Eiryō Kawakami^{1,2} (¹ADSP, R-IH, RIKEN, ²Dept. of AI Med., Grad. Sch. of Med., Chiba Univ.)

1AS-17-Conclusion **[11:14]**

Shinya Kuroda (The University of Tokyo)

1PS-16 Room 16 (Pacifco Yokohama Conference Center, 5F, 502) **15:45-18:00 [E]**

Biodiversity for Exciting Discoveries

Organizer : Tetsuya Higashiyama (The University of Tokyo / Nagoya University)

1PS-16-Introduction **[15:45]**

Tetsuya Higashiyama (The University of Tokyo / Nagoya University)

1PS-16-1 **[15:55]**

Investigation of the mechanisms underlying delayed aging and cancer-resistance in the longest-lived rodent, the naked mole-rat

Kyoko Miura (Dept of Aging and Longevity Research, Faculty of Life Sci, Kumamoto Univ.)

1PS-16-2 **[16:25]**

How do axolotls regenerate the right amount of tissue?

Elly Tanaka (Institute of Molecular Pathology)

1PS-16-3 **[16:55]**

Dark energy ecosystem predicted and not predicted by chemical disequilibrium

Ken Takai (X-STAR, JAMSTEC)

1PS-16-4 **[17:25]**

A Role for Epigenetic Variation in Plant Ecology and Evolution

Rolf Baumberger, Ueli Grossniklaus (Dept. Plant and Microbial Biol. & Zürich-Basel Plant Science Center, University of Zürich)

1PS-16-Discussion **[17:55]**

1PS-17 Room 17 (Pacifco Yokohama Conference Center, 5F, 503) **15:45-18:00 [E]**

RNA in Nuclear Architecture and Chromatin Organization

Organizers : Hitoshi Kurumizaka (The University of Tokyo)
Yuka Iwasaki (Keio University)

1PS-17-1 **[15:45]**

Nuclear Architectural Regulation by Piwi-piRNAs

Yuka Iwasaki (Dept. Mol. Biol., Keio Univ. Sch. of Med.)

1PS-17-2 **[16:07]**

The endoribonuclease SCHLAFEN9 enforces retrotransposon silencing

Mathilde Gauchier, Jerome Dejardin (Institute of Human Genetics CNRS UMR9002)

1PS-17-3 **[16:32]**

Architectural roles of noncoding RNAs in formation and function of nuclear bodies

Tetsuro Hirose^{1,2}, Tomohiro Yamazaki¹, Kensuke Ninomiya¹ (¹FBS, Osaka Univ., ²Grad. Sch. of Sci, Osaka Univ.)

1PS-17-4**[16:54]****Biomolecular Condensates: from Genome Regulation to Disease Biology**

Hiroshi I. Suzuki (Div. Mol. Onco., Nagoya Univ. Grad. Sch. of Med.)

1PS-17-5**[17:16]****Chromatin accessibility and transcriptional activities**

Yusuke Miyanari (NanoLSI, CRI, Kanazawa U.)

1PS-17-6**[17:38]****Structural and biochemical studies of nucleosome transcription in the presence of nuclear co-factors**

Hitoshi Kurumizaka (Lab. of Chromatin struct. funct., IQB, Univ. of Tokyo)