第40回札幌国際がんシンポジウム

The 40th Sapporo International Cancer Symposium

Tumor heterogeneity:
From genomic evolution to clinical impact

会期
2022年6月23日~25日
June 23 (Thu) - 25 (Sat), 2022

Hybrid Meeting (On-site/Online)

ロイトン札幌
Royton Sapporo, Sapporo, Hokkaido Japan

主催
公益財団法人札幌がんセミナー
Sapporo Cancer Seminar Foundation

世界一
村上 善則
Yoshinori Murakami (The University of Tokyo)

落合 淳志
Atsushi Ochiai (Tokyo University of Science/National Cancer Center)

柴田 龍弘
Tatsuhiro Shibata (The University of Tokyo/National Cancer Center)

舛森 直哉
Naoya Masumori (Sapporo Medical University)

Patrice TAN
Duke-NUS Medical School

Program & Abstract
June 24 (Fri)

9:00-9:10  Welcome address
           Masanori Hatakeyama

9:10-10:00 Keynote Lecture 1
           Chair: Yoshinori Murakami (The University of Tokyo)

K1  Comprehensive driver landscape of gastric cancer
    Tatsuhiro Shibata
    The Institute of Medical Science, The University of Tokyo, Japan

10:00-12:15  Session 1. Genomic evolution
              Chair: Atsushi Ochiai (Tokyo Science University / National Cancer Center)

S1-1  Clonal expansion in normal tissues
      Nobuyuki Kakiuchi
      Kyoto University
      10:30-10:45  Break

S1-2  Genetic basis of mosaic chromosomal alteration highlights its cellular origin and biology
      Chikashi Terao
      Laboratory for Statistical and Translational Genetics, RIKEN Center for Integrative Medical Sciences

S1-3  Cancer heterogeneity of infant leukemia and its implication for prognosis and treatment
      Junko Takita
      Department of Pediatrics, Graduate School of Medicine, Kyoto University

S1-4  Various heterogeneities about BRCA1 and BRCA2
      Yukihide Momozawa
      RIKEN Center for Integrative Medical Sciences
      12:15-12:30  Break

12:30-13:20  Luncheon Seminar 1
              Chair: Wataru Obara (Iwate Medical University)
              Co-sponsored: MSD K.K.

LS-1  Intratumoral Heterogeneity in renal cell carcinoma and current treatment strategy
      Ryuichi Mizuno, Mototsugu Oya
      Department of Urology, Keio University, School of Medicine
      13:20-13:30  Break
13:30-14:20  Keynote Lecture 2

Chair: Atsushi Ochiai (Tokyo Science University / National Cancer Center)

K2  Gastric Cancer beyond Gene Mutations: Single-cells and Epigenomes

Patrick Tan¹ ² ³
¹Duke-NUS Medical School
²Genome Institute of Singapore
³Cancer Science Institute of Singapore, NUS

14:20-14:30  Break

14:30-15:30  Poster Session 1

Chair: Tatsuhiro Shibata (The University of Tokyo, National Cancer Center)

P1-1  Heterogeneous impact of germline pathogenic variants on lymphoma risk

Yoshiaki Usui¹, Yusuke Iwasaki¹, Keitaro Matsuo¹, Mikiko Endo¹, Yoichiro Kamatani², Makoto Hirata², Kokichi Sugano², Teruhiko Yoshida², Koichi Matsuda², Yoshinori Murakami², Yoshinobu Maeda², Hideaki Nakagawa¹, Yukihide Momozawa¹
¹RIKEN
²Okayama University
³Aichi Cancer Center
⁴The University of Tokyo
⁵National Cancer Center Hospital

P1-2  Primate-specific gene X is a novel prognostic factor in malignant pancreatic cancer

Shoichiro Tange¹, Tomomi Hirano¹, Asae Okuyama¹, Masashi Idogawa¹, Eishu Hirata², Issei Imoto³, Takashi Tokino¹
³Aichi Cancer Ctr. Res. Inst.

P1-3  Molecular profiling of cancer-related gene alterations in Japanese patients with multiple myeloma

Yasushi SASAKI¹ ² ³ ⁴, Hisayo Fukushima¹ ² ³ ⁴, Hiroshi Ikeda¹ ² ³ ⁴, Kazuya Ishiguro¹, Asami Matsuda¹ ² ³ ⁴, Shoichiro TANGE¹, Masashi IDOGAWA¹, Akihiro SAKURA¹, Takashi TOKINO¹
¹Biology Division, Department of Liberal Arts and Sciences, Center for Medical Education, Sapporo Medical University
²Department of Medical Genome Sciences, Research Institute for Frontier Medicine, Sapporo Medical University
³Department of Medical Genetics, Sapporo Medical University
⁴Department of Hematology, Sapporo Medical University
⁵Department of Gastroenterology, Sapporo Medical University

P1-4  Association of mosaic chromosomal alterations with the development of various types of cancer and body mass index

Keiko Hikino, Chikashi Terao
RIKEN Center for Integrative Medical Sciences

P1-5  Characterization of OASEP1 as a biomarker and therapeutic target for oral cancer

Atsushi Takano¹ ² ³ ⁴, Yoshiihiro Yoshitake⁴, Masanori Shinohara⁴, Yataro Daigo¹ ² ³
¹Center for Antibody and Vaccine Therapy, Institute of Medical Science, The University of Tokyo
²Department of Medical Oncology and Cancer Center, Shiga University of Medical Science
³Laboratory of Soft & Wet Matter, Faculty of Advanced Life Science, Hokkaido University
⁴Department of Oral and Maxillofacial Surgery, Kumamoto University

P1-6  Substrate charge regulates stemness of cancer and pluripotent stem cells via metabolic control of pluripotency factors

Masamichi Imao¹, Akira Hirota¹, Ryosuke Miyazaki¹, Jian-Ping Gong¹, Shinya Tanaka¹ ²
¹Institute for Chemical Reaction Design and Discovery (WPI-ICReDD), Hokkaido University
²Department of Cancer Pathology, Faculty of Medicine, Hokkaido University
³Laboratory of Soft & Wet Matter, Faculty of Advanced Life Science, Hokkaido University
P1-7 Therapeutic potential of cancer vaccine based on MHC class I cryptic peptides derived from non-coding regions .................................................................................................................. 62
Serina Tokita, Takayuki Kanaseki, Toshihiko Torigoe
Department of Pathology, Sapporo Medical University

P1-8 Identification and functional analysis of HLA class II neoantigens in HLA class II negative colorectal cancer tissues ................................................................................................................................. 63
Satoru Matsumoto1,2, Takayuki Kanaseki1, Serina Tokita1, Toshihiko Torigoe1
1Department of Pathology, Sapporo Medical University School of Medicine
2IMS Sapporo Digestive Disease Center General Hospital

P1-9 A lncRNA associated with chronic gastritis and gastric cancer inhibits apoptosis through stress granule formation .................................................................................................................. 64
Hiroshi Kitajima1, Reo Maruyama2, Akira Takasawa2, Takeshi Niinuma1, Eiichiro Yamamoto1, Kazuya Ishiguro1, Ayano Yoshido1, Masahiro Kai1, Makoto Osanai2, Takashi Tokino1, Hiroshi Nakase1, Hiromu Suzuki1
1Dept. of Molecular Biology, Sapporo Medical Univ.
2Project for Cancer Epigenome, The Cancer Institute of JFCR
3Dept. of Pathology, Sapporo Medical Univ.
4Dept. of Medical Genome Sciences, Research Institute of Frontier Medicine, Sapporo Medical Univ.
5Dept. of Gastroenterology and Hepatology, Sapporo Medical Univ.

P1-10 Helicobacter pylori CagA causes transient BRCAness to induce genome instability in gastric epithelial cells ............................................................................................................................... 65
Naoko Kamiya1, Masanori Hatakeyama2
1Hokkaido University
2Institute of Microbial Chemistry

P1-11 Intratumoral heterogeneity in colorectal cancer -Increasing malignancy of cancer cells by M6P in tumor budding area- ................................................................................................................. 66
Rintaro Ohe, Takanobu Kabasawa, Mitsuru Futakuchi
Department of Pathology, Yamagata University Faculty of Medicine

15:30-15:40 Break

15:40-18:10 Session 2. Tumor heterogeneity
Chair: Yoshinori Murakami (The University of Tokyo)

S2-1 Epigenetic remodelling of tumor microenvironment to overcome immunotherapy resistance .................................................................................................................................................... 26
Alfred Cheng
School of Biomedical Sciences, Faculty of Medicine, The Chinese University of Hong Kong

S2-2 The landscape of HLA-presenting antigenic peptides and their immunogenic heterogeneity ............................................................................................................................... 28
Toshihiko Torigoe, Yoshihiko Hirohashi, Tomohide Tsukahara, Takayuki Kanaseki, Terufumi Kubo, Kenji Murata, Tomoyuki Mimowa, Hisashi Uhara, Masahiro Matsuki, Naoya Masumori
Sapporo Medical University

S2-3 Gastrointestinal cancer evolution and its implications for therapeutics and biomarker development .................................................................................................................................................. 30
Marco Gerlinger
Barts Cancer Institute, Queen Mary University of London, UK
S2-4 Applications of Spatial Transcriptome Analysis to elucidate the cancer heterogeneity

Yutaka Suzuki
The University of Tokyo

S2-5 Cancer heterogeneity from the perspective of stromal fibroblasts

Atsushi Ochiai\(^1,2\)
\(^1\)Research Institute for Biomedical Sciences, Tokyo University of Science
\(^2\)National Cancer Center
June 25 (Sat)

9:00-10:00  Session 3. Tumor heterogeneity and plasticity
Chair: Yoshinori Murakami (The University of Tokyo)

S3-1  MYC drives small cell lung cancer (SCLC) subtype plasticity
Trudy G. Oliver
Duke University, Durham, NC, USA

S3-2  The impact of vascular endothelial cell heterogeneity in tumor microenvironment
Kyoko Hida
Vascular Biology and Molecular Biology, Graduate school of Dental Medicine, Hokkaido University

10:00-12:15  Session 4. Technological advances
Chair: Yutaka Suzuki (The University of Tokyo)

S4-1  Cell-type specific post-transcriptional regulation is pervasive
Julia Salzman
Department of Biomedical Data Science and of Biochemistry, Stanford University

S4-2  Dynamics and colocalization of deep learning-based cell states behind single cell and spatial transcriptome observation
Yasuhiro Kojima, Tepehi Shimamura
Nagoya University

S4-3  Pan-cancer pervasive upregulation of 3’ UTR splicing drives tumourigenesis
Yvonne Tay1,2, Jia Jia Chan1, Bin Zhang2
1National University of Singapore
2Cancer Science Institute of Singapore

S4-4  Immunosuppression by regulatory T cells in the tumor microenvironment
Hiroyoshi Nishikawa1,2
1Division of Cancer Immunology, Research Institute/ EPOC, National Cancer Center
2Department of Immunology, Nagoya University Graduate School of Medicine

12:30-13:20  Luncheon Seminar 2
Chair: Atsushi Mizokami (Kanazawa University Graduate School of Medical Science)
Co-sponsored: Janssen Pharmaceutical K.K.

LS-2  Spatial and temporal heterogeneity of prostate cancer, basics to clinical implications
Shusuke Akamatsu
Department of Urology, Kyoto University Graduate School of Medicine

13:20-13:30  Break
P2-1 Differences of the molecular mechanisms in dedifferentiation potential of breast cancer cells using hydrogels

Jun Suzuka1, Sumito Saecki2, Kohei Kumezawa1, Yoko Takahashi3, Takayuki Ueno1, Shinji Ohno1, Masumi Tsuda1, Shinya Tanaka1, Reo Maruyama2

1NEX-Ganken Prog., JFCR
2Project Cancer Epigenome, The Cancer Inst., JFCR
4Dept. of Cancer Pathol., Fac. of Med., Hokkaido Univ.
5Inst. for Chemical Reaction Design and Discovery (WPI-ICReD), Hokkaido Univ.

P2-2 Analysis of novel long non-coding RNA in head and neck cancer

Takeshi Ninuma, Hiroshi Kitajima, Kai Masahiro, Hiromu Suzuki
Sapporo Medical University of Medicine

P2-3 GRHL2 motif is associated with intratumor heterogeneity of cis-regulatory elements in luminal breast cancer

Reo Maruyama1,2, Kohei Kumezawa2, Yoko Takahashi2,3, Sumito Saecki1, Liying Yang1, Shinji Ohno2,3, Takayuki Ueno1,3

1Project for Cancer Epigenomics, Cancer Institute, JFCR
2NEX-Ganken Program, JFCR
3Breast Oncology Center, Cancer Institute Hospital, JFCR

P2-4 Reduced stromal expresssioCXCL12 is associated with the aggressiveness of tongue oral squamous cell carcinoma

Akira Yorozu1,2, Shohei Sekiguchi1, Akira Takasawa2, Takeshi Ninuma2, Makoto Kurose2, Kazufumi Otaba1, Akito Kakiuchi1, Makoto Osanai1, Akihiro Miyazaki1, Kenichi Takano1, Hiromu Suzuki2


P2-5 Analysis of characteristics of synovial sarcoma stem cells induced by synthetic polymer hydrogels

Yuki Terashima1, Masumi Tsuda1, Kyosuke Fujishima1, Kosei Nakamura1, Lei Wang1, Jian Ping Gong1, Shinya Tanaka1

1Sch. of Med. 6th Grade, Hokkaido Univ., Sapporo, Japan
2Dept. of Cancer Pathol., Faculty of Med., Hokkaido Univ., Sapporo, Japan
3WPI-ICReD, Hokkaido Univ., Sapporo, Japan
4Lab. of Soft and Wet Matter, Faculty of Adv. Life Science, Hokkaido Univ., Sapporo, Japan

P2-6 Molecular characterization of HJURP as a new cancer biomarker and therapeutic target for oral cancer

Bayarbat Tsevegijav1,2, Atsushi Takano1,2, Ming Zhu1,2, Yoshihiro Yoshitake1, Masanori Shinohara1, Yataro Daigo1,2

1Department of Medical Oncology and Cancer Center, Shiga University of Medical Science
2Center for Advanced Medicine against Cancer, Shiga University of Medical Science
3Center for Antibody and Vaccine Therapy, Institute of Medical Science, The University of Tokyo
4Department of Oral and Maxillofacial Surgery, Kumamoto University

P2-7 Tumor-infiltrating CD8+ T cells recognize a heterogeneously expressed neoantigen in clear cell renal cell carcinoma

Masahiro Matsuiki1,2, Yoshihiko Hirohashi2, Munehide Nakatsugawa2,3, Aiko Murai2, Terufumi Kubo2, Takayuki Kanaseki2, Tomohide Tsukahara2, Shinichi Hashimoto2, Naoya Masumori2, Toshihiko Torigoe2

1Hakodate Goryoukaku Hospital
2Department of Pathology, Sapporo Medical University School of Medicine
3Department of Diagnostic Pathology, Tokyo Medical University Hachioji Medical Center
4Department of Molecular Pathophysiology, Institute of Advanced Medicine, Wakayama Medical University
5Department of Urology, Sapporo Medical University School of Medicine
P2-8 Identification of new targets for pancreatic cancer stem cells using hydrogen I and development of therapeutic methods
Lei Wang1,2, Yuma Aoki1, Masumi Tsuda1,2, Shinya Tanaka1,2
1Institute for Chemical Reaction Design and Discovery, Hokkaido University
2Department of Cancer Pathology, Faculty of Medicine, Hokkaido University
3Department of Gastroenterological Surgery II, Faculty of Medicine, Hokkaido

P2-9 Stromal AEBP1 promotes development of head and neck squamous cell carcinoma
Shohei Sekiguchi1, Akira Yorozu2-3, Fumika Okazaki1,2, Eiichiro Yamamoto3,4, Takeshi Niinuma2, Akira Takasawa3, Gozi Sudo4, Yui Hatanaka1,2, Ayano Yoshido2, Hiroshi Kitajima2, Masahiro Kari2, Makoto Osanai1, Yoshikiko Hirohashi2, Takashi Kojima2, Akihiro Miyazaki1, Hiromu Suzuki2
1Department of Oral Surgery, Sapporo Medical University School of Medicine
2Department of Molecular Biology, Sapporo Medical University School of Medicine

P2-10 Genetic analysis of postmortem tissue samples for patient with castration-resistant prostate cancer: A case study
Ko Okabe, Kohei Hashimoto, Hidetoshi Tabata, Tetsuya Shindo, Toshiaki Tanaka, Naoya Masumori
Department of Urology, Sapporo Medical University School of Medicine

P2-11 Comprehensive association analysis between clustered microRNA and cancer: a machine learning study with large-scale data
Masanori Nojima, Yin Mo
The Institute of Medical Science, The University of Tokyo

P2-12 Novel drug formulation for potentiation of therapeutic response using the lymphatic drug delivery system
Radhika Mishra, Ariunbayan Sukhbaatar, Maya Sakamoto, Shiro Mori, Tetsuya Kodama
Laboratory of Biomedical Engineering for Cancer, Graduate School of Biomedical Engineering, Tohoku University

P2-13 Targeting lymph node metastasis through lymphatic drug delivery system by administration of docetaxel
Ariunbayan Sukhbaatar1,2, Shiro Mori1,2, Tetsuya Kodama1,2
1Laboratory of Biomedical Engineering for Cancer, Graduate School of Biomedical Engineering, Tohoku University
2Biomedical Engineering Cancer Research Center, Graduate School of Biomedical Engineering, Tohoku University

P2-14 Identification of URST7 as a prognostic biomarker and therapeutic target for breast cancer
Regina Mbugua1,2, Takano Atsushi2,3, Tsevegjav Bayarbat2,3, Mihagi Yohei1, Daigo Yataro1,2,3,1
2Ctr. Advanced Med. against Cancer, Shiga Univ. of Med. Sci., Otsu, Shiga, Japan
3Ctr. Antibody and Vaccine Ther, Inst. Med. Sci., Univ. Tokyo, Tokyo, Japan
4Mol. Pathol. & Genet. Div., Kanagawa Cancer Ctr., Kanagawa, Japan
15:00-17:00  Session 5. Clinical impact and drug resistance
Chair: Naoya Masumori (Sapporo Medical University)

SS-1  Microsatellite instability-high CRC acquires frequent sub-clonal immune escape mechanisms by Darwinian evolution. ......................................................... 48
Koshi Mimori
Kyushu University Beppu Hospital

SS-2  Novel treatment approach for targeting RAS Q61 mutant cancers ........................................ 50
Yoshihisa Kobayashi
National Cancer Center Research Institute

SS-3  Current treatment strategy for muscle invasive and metastatic bladder cancer .............. 52
Naoya Masumori
Sapporo Medical University

SS-4  Cell context-dependent roles of a cell adhesion molecule, CADM1, in human oncogenesis. ................................................................. 54
Yoshinori Murakami
Division of Molecular Pathology, The Institute of Medical Science, The University of Tokyo

17:00-17:10  Closing remark
Yoshinori Murakami