# Day 2

October 2 (Friday)

## Core Symposia

Room 1 Oct. 2 (Fri.) 9:00-11:30 E

### CS2 Cutting edge of stomach carcinogenesis
**胃がん発生・進展の先端的理解**

Chairpersons: Wataru Yasui (Dept. Mol. Path., Grad. Sch. of Biomed. & Health Sci. Hiroshima Univ.)
Adam Bass (Dana faber)
座長：安井 弥（広島大・院医・分子病理学）
Adam Bass (Dana faber)

Gastric cancer is globally the third most common cause of cancer-related death. Although the incidence has been declining, nearly one million new cases are reported worldwide every year. The highest incidence is found in Eastern Aria, Eastern Europe and South America. Gastric cancer develops as a result of multiple genetic and epigenetic alterations. Using high-throughput sequencing technology, molecular subtypes have been identified that link to therapeutic strategies. Trans-ethnic genome analysis reveals uncharacterized impact of germline variants and their interactions with lifestyle in high-risk areas. CagA protein of Helicobacter pylori plays a crucial role in stomach carcinogenesis. Because the process of stomach carcinogenesis is in a stepwise fashion, appropriate mouse models are needed. One important issue is the diffuse-type gastric cancer in young populations. In this symposium, top researchers in this field will present their most recent research findings. Deeper insights of genetics and biology will bring suitable prevention and optimal cures for gastric cancer.

**CS2-1** **Pathogenesis of Chromosomal Instability in Gastric Cancer: Links to Therapeutic Strategies**
Adam J Bass (Dept. Med. Oncology, Dana-Farber Cancer Inst.)

**CS2-2** **TBD**
Daehee Hwang (Dept. Biological Sci., Seoul Natl. Univ.)

**CS2-3** **Mechanism underlying "Hit-and-Run" gastric carcinogenesis by the *Helicobacter pylori* CagA oncoprotein**
Masanori Hatakeyama (Div. Microbiol., Grad. Sch. Med., The Univ. Tokyo)
**ピロリ菌がんタンパク質 CagA による"ヒットエンドラン"型胃発がん機構**
畠山 昌則（東京大・医・微生物）

**CS2-4** **Genomically defined Environmental and Germline Factors for Asian Gastric Cancer**
Shumpei Ishikawa (Preventive Med. Univ. of Tokyo)
**ゲノムから見たアジアの胃がんの環境および遺伝因子**
石川 俊平（東京大・医・衛生学）

**CS2-5** **Mouse models of gastritis and gastric cancer and relationship to human pathogenesis**
Yoku Hayakawa, Masahiro Hata, Mayo Tsuboi, Kazuhiko Koike (Dept. Gastroenterology, The Univ. of Tokyo)
**胃炎・胃癌マウスモデルとヒト疾患の病態理解**
早河 翼、畑 昌宏、坪井 真代、小池 和彦（東京大・消化器内科）

**CS2-6** **Special Remarks**
Eiichi Tahara (Chairman, Hiroshima Cancer Seminar Public Interest Incorporated Foundation)
**特別発言**
田原 榮一（(公財）広島がんセミナー・理事長）

## JCA-AACR Joint Symposia
**Sponsored by Princess Takamatsu Cancer Research Fund**

Room 2 Oct. 2 (Fri.) 9:00-11:30 E

### AACR2 Cancer Model System: Organoid

Chairperson: Toshiro Sato (Dept. Organoid Med., Keio Univ. Sch. of Med.)
座長：佐藤 俊朗（慶應大・医・オルガノイド医学）

Recent advances in sequencing technology delineated the genetic abnormality of human cancers. However, there remains a gap between genetic abnormalities and clinical cancer phenotypes due to a paucity of disease models that can recapitulate a variety of biological aspects of clinical cancers. Organoid technology was originally developed to regenerate tissue-like structures from pluripotent stem cells or tissue stem cells. Recent works demonstrated that organoids can be derived from patient cancer tissues without losing their original biological traits, such as drug sensitivity, pathohistology, cancer stem cell hierarchy, and metastatic potentials. Furthermore, prospective genetic engineering with CRISPR-Cas9 has begun to reveal causal relationships between genetic abnormalities and cancer phenotypes. In this symposium, four distinguished speakers will present their novel findings using cancer organoids. These presentations will cover how we apply organoid technology to cancer research, how genetic abnormalities lead to the biological phenotypes, and how we develop a therapeutic strategy using patient-derived cancer organoids.

**AACR2-1** **Deepening insights of cancer biology using patient-derived cancer organoids**
Toshiro Sato (Dept. Organoid Med., Keio Univ. Sch. of Med.)
**臨床がん由来オルガノイドからのがん生物学への洞察**
佐藤 俊朗（慶應大・医・オルガノイド医学）

**AACR2-2** **Elucidation and control of cancer ecosystem using artificial cancer tissue**
Keisuke Sekine (Natl. Cancer Ctr. Res. Inst.)
**人為的がん組織構築によるがんエコシステムの解明と制御**
関根 圭輔（国立がん研セ・研）

**AACR2-3** **Pancreatic Cancer Organoids: Models and Solutions**
David A. Tuveson (Cold Spring Harbor Lab., Cold Spring Harbor, New York)

**AACR2-4** **Patient-Derived Organoids for Precision Oncology**
Nicola Valeri (The Inst. of Cancer Res., Belmont, Sutton Surrey, United Kingdom)

## Special Symposia

Room 3 Oct. 2 (Fri.) 9:00-11:30 E

### SS3 Cancer immunotherapy -past, present, and future-
がん免疫療法の成果・課題と今後の展開

Chairpersons: Hiroyoshi Nishikawa (Dept. Immunology/ Div. Cancer Immunol., Res. Institute/ Exploratory Oncology Res. & Clin. Trial Ctr. (EPOC),, Nagoya Univ. Grad. Sch. of Med./Natl. Cancer Ctr.)
Yutaka Kawakami (International Univ. of Health & Welfare Sch. of Med./ Div. Cell. Signaling Inst. for Advanced Med. Res., Keio Univ. Sch. of Med.)

座長：西川 博嘉（名古屋大・院医／国立がん研セ・微生物・免疫学講座・分子細胞免疫学／研・腫瘍免疫研究分野／先端医療開発セ・免疫 TR 分野）
河上 裕（国際医療福祉大・医／慶應大・医・先端研・細胞情報研究部門）

Cancer immunotherapy has become one of the standard therapies for various types of cancer including melanoma, lung cancer, gastric cancer, renal cell cancer, leukemia and lymphoma based on the success of immune checkpoint inhibitors and CART therapy. However, there are still many patients who do not benefit from the current immunotherapy. It is thus important to identify predictive biomarkers that can stratify responders from non-responders, and to develop more effective immunotherapy through the detailed analyses on immune responses in patients. Various immunomodulatory approaches have been attempted to stimulate antitumor immune responses and regulate immunosuppressive tumor microenvironment. In this symposium, we will discuss the molecular basis of tumor immunity that may lead to novel immunotherapeutic approaches (e.g. T cell dynamics, immunosuppression, immunometabolism, ex vivo cell therapy, tumor microenvironment). We hope that our discussion will show the future direction of the research toward next generation cancer immunotherapy.

**SS3-1** **Dynamics of CD8⁺ T cell subsets correlated with clinical response to anti-PD-1 antibody**
Yutaka Kawakami[1,2], Shigeki Ohta[2] ([1]Dept. Immunol., Sch. Med., Intl. Univ. Health & Welfare, [2]Inst. Adv. Med. Res., Keio Univ., Sch. Med.)
**PD-1 抗体の治療効果と相関する CD8⁺ T 細胞サブセットの動態**
河上 裕[1,2]、大多 茂樹[2]（[1]国際医療福祉大・医・免疫、[2]慶應大・医・先端医科学）

**SS3-2** **Development of biomarkers and cancer immunotherapies targeting immunosuppressive mechanisms in tumors**
Hiroyoshi Nishikawa[1,2] ([1]Div. Cancer Immunol., Res. Inst. / EPOC, NCC, [2]Dept. Immunol., Nagoya Univ., Grad. Sch. Med.)
**免疫抑制機構を標的としたバイオマーカーと新規治療法開発**
西川 博嘉[1,2]（[1]国立がん研セ・研・腫瘍免疫／EPOC・免疫 TR、[2]名古屋大・医・免疫）

**SS3-3** **Immune metabolism-based responsive biomarkers and mechanistic analysis of anti-tumor immunity**
Kenji Chamoto (Dept. Imm. Genom. Med., Kyoto Univ., Sch. Med.)
**代謝環境を考慮したバイオマーカー開発と抗腫瘍免疫メカニズム解析**
茶本 健司（京都大・院医・免疫ゲノム）

**SS3-4** **Adoptive Cell therapy with gene engineered T cells**
Hiroshi Shiku (Personalized Cancer Immunotherapy, Mie Univ. Grad. Sch.)
**遺伝子改変 T 細胞の輸注療法**
珠玖 洋（三重大院医・個別化がん免疫治療学）

**SS3-5** **Cross talk between PRC2 and SWI/SNF in cancer immunity and immunotherapy**
Weiping Zou (The Univ. of Michigan)

## Symposia

Room 4 Oct. 2 (Fri.) 9:00-11:30 E

### S9 New strategies for epidemiologic research in cancer etiology (JCA-JSCE Joint Symposium)
がんの原因究明に資する疫学研究における新たな戦略
（日本癌学会・日本がん疫学・分子疫学研究会 合同シンポジウム）

Chairpersons: Shoichiro Tsugane (Ctr. for Public Health Sci., Natl. Cancer Ctr.)
Chisato Nagata (Dept. Epidemiology & Preventive Med., Gifu Univ. Grad. Sch. of Med.)

座長：津金 昌一郎（国立がん研セ・社会と健康研究セ）
永田 知里（岐阜大・院医・疫学・予防医学）

The main purpose of cancer epidemiology is to elucidate the etiology of different types of cancers by the search addressing the association between exposure (or risk factor) and the risk of disease cancer. Exposure refers to any factor that can affects the risk; such factors include environmental agents, lifestyle variables, and genetic traits. In addition to establishing whether particular exposure-disease association exists, cancer epidemiology attempts to measure their strength. It is recognized that known risk factors have not been found to explain the entirely of cancer epidemiology. Novel hypotheses and new methodologies and practices of exposure assessments would facilitate the discovery of new etiologic factors. Attempts to precisely determine the magnitude of the exposure–disease associations and to generate the risk prediction models would contribute to early introduction of effective preventive measures. In this joint symposium of the Japan Cancer Association and the Japanese Society of Cancer Epidemiology, five experts will present these new approaches and challenges and discuss the strategies in cancer epidemiologic research.

**S9-1** **Lifestyle and cancer risk in Japanese: evidence from pooled analyses in a consortium of cohort studies**
Kenji Wakai[1], Manami Inoue[2] ([1]Dept. Prev. Med. Nagoya Univ. Grad. Sch. Med., [2]Div. Prev., Ctr. for Public Health Sci., Natl. Cancer Ctr.)
**生活習慣と日本人のがんリスク：コホート研究コンソーシアムにおけるプール解析からのエビデンス**
若井 建志[1]、井上 真奈美[2]（[1]名古屋大・院医・予防医学、[2]国立がん研究セ・社会と健康研究セ・予防）

**S9-2** **Epidemiologic evidence regarding the gut microbiota in the development of colorectal cancer.**
Shinichi Yachida (Dept. Cancer Genome Informatics, Osaka Univ., Grad. Sch. Med.)
**新たな暴露評価に向けたエビデンスの構築：腸内細菌とがん**
谷内田 真一（大阪大・医・がんゲノム情報学）

**S9-3** **Evidence from studies using biomarkers: Focus on inflammatory markers on a multiplex panel**
Minkyo Song (Div. Cancer Epidemiology & Genetics, NCI)

**S9-4** **Air pollution and cancer**
Takashi Yorifuji (Dept. Epidemiology, Okayama Univ.)
**大気汚染とがん**
頼藤 貴志（岡山大・医・疫学・衛生学分野）

**S9-5** **Introduction of mediation analysis utilizing genetic information in cancer epidemiological study**
Keitaro Matsuo[1,2] ([1]Div. Cancer Epi. & Prev., Aichi Cancer Ctr. Res. Inst., [2]Div. Cancer Epi., Nagoya Univ. Grad. Sch. Med.)
**がん疫学研究における遺伝情報を用いた媒介分析**
松尾 恵太郎[1,2]（[1]愛知県がんセ・研・がん予防、[2]名古屋大・医・がん分析疫学）

Room 5 Oct. 2 (Fri.) 9:00-11:30 E

## IS5 Exosome-based cancer diagnosis and therapeutics
エクソソームの診断・治療の最前線

Chairpersons: Takahiro Ochiya (Dept. Mol. & Cell. Med., Inst. of Med. Sci., Tokyo Med. Univ.)
Sai-Kiang Lim (Inst. of Med. Biol., A STAR)
座長：落谷 孝広（東京医大・医学総合研・分子細胞治療研究部門）
Sai-Kiang Lim (Inst. of Med. Biol., A STAR)

Cancer research has found a novel platform in studying exosomes, one of the 50–150 nm membrane-bound extracellular vesicles (EVs), secreted by cells as molecular-messengers. These EVs of endocytic origin act as signaling conveyors between cells by transporting molecular cargo in the form of proteins, RNAs, DNAs, and lipids. The several complicated roles of exosomes in normal physiology and disease sate are becoming clearer. Their role in cancer biology is being found to range from sending protumorigenic messages between cancer cells and to stromal cells to aid in the growth and invasion of tumor cells in tumor microenvironment. Tumor exosomes are implicated in angiogenesis, metastasis, drug resistance, immune circumvention, and tumor pathogenesis. In this International Session, researchers in Asia are discussing the importance of understanding exosomes, as they connect to cancer, as a tool for discovering cancer biomarkers, elucidating the molecular mechanisms of cancer biology, identifying therapeutic targets, and using exosomes themselves as a mode of therapy against cancer.

**IS5-1** **The exosomal protein in cancer: exosome-mediated metastasis and biomarker potential**
Ayuko Hoshino[1,2] ([1]Dept. Life Sci. & Tech., Tokyo Inst. of Tech., [2]Dept. Pediatrics, Weill Cornell Med.)
**がんにおけるエクソソームのプロテオミクス: 転移寄与分子とがん診断バイオマーカーの解析**
星野 歩子[1,2]（[1]東京工業大・生命理工学院、[2]コーネル大・医学部）

**IS5-2** **Extracellular matrix-mediated premetastatic niche formation**
Tang-Long Shen (Dept. Plant Pathol. & Microbiol., Natl. Taiwan Univ.)

**IS5-3** **New technology for analysis of extracellular vesicles towards clinical diagnosis**
Lei Zheng, Bo Li, Chunchen Liu, Weilun Pan (Dept. Clin. Lab. Med., Nanfang Hosp., SMU, China)

**IS5-4** **Bacterial Exosomes as Next-Generation Cancer Immunotherapy**
Yong Song Gho (Dept. Life Sci., POSTECH, Republic of Korea)

**IS5-5** **MSC exosomes: a foe or friend of cancer?**
Sai Kiang Lim (Inst. of Moelcular & Cell Biol.)

**IS5-6** **A novel approach for liquid biopsy by using nuclear derived exosomes in ovarian cancer**
Akira Yokoi[1,2] ([1]Nagoya Univ. Med. Dept. Obst. & Gynecol., [2]UT MD Anderson Cancer Ctr., Dept. Gynecol. Repro. Med.)
**核由来 DNA 搭載エクソソームを用いた新規リキッドバイオプシー戦略**
横井 暁[1,2]（[1]名古屋大・医・産婦人科、[2]UT MD アンダーソンがんセ・婦人腫瘍科）

**IS5-7** **Innovative exosome-based therapeutics; Local oncolytic adenovirotherapy inducing the abscopal effect *via* exosome**
Yoshihiko Kakiuchi[1], Shinji Kuroda[1], Nobuhiko Kanaya[1], Kento Kumon[1], Tomoko Tsumura[1], Masashi Hashimoto[1], Chiaki Yagi[1], Ryouma Sugimoto[1], Satoru Kikuchi[1], Masahiko Nishizaki[1], Shunsuke Kagawa[1], Hiroshi Tazawa[1], Yasuo Urata[2], Toshiyoshi Fujiwara[1] ([1]Dept. Gastroenterological Surg., Okayama Univ., [2]Oncolys BioPharma, Inc.)
**エクソソームを用いた革新的治療法；腫瘍融解アデノウイルス局所療法後に産生されるエクソソームはアブスコパル効果を起こす**
垣内 慶彦[1]、黒田 新士[1]、金谷 信彦[1]、公文 剣斗[1]、津村 朋子[1]、橋本 将志[1]、八木 千晶[1]、杉本 龍馬[1]、菊地 覚次[1]、西崎 正彦[1]、香川 俊輔[1]、田澤 大[1]、浦田 泰生[2]、藤原 俊義[1]（[1]岡山大・医歯薬総合・消化器外科学、[2]オンコリスバイオファーマ（株））

**IS5-8** **Development of the exosomal mutated protein panel for colorectal cancer liquid biopsy**
Atsushi Ikeda[1], Makoto Konishi[1], Satoshi Nagayama[2], Koji Ueda[1] ([1]Can Proteo Gr, CPM Ctr., JFCR, [2]Dept. Gastroenterol. Surg., Cancer Inst. Hosp., JFCR)
**大腸癌エクソソーム変異タンパク質パネル診断技術の開発**
池田 篤志[1]、小西 惇[1]、長山 聡[2]、植田 幸嗣[1]（[1]（公財）がん研・CPM セ・プロテオミクス解析 Gr、[2]（公財）がん研・有明病院・消化器外科）

**IS5-9** **Extracellular Vesicular microRNAs for Liquid Biopsy Detection of Gastric Cancer**
Ka Yan Chung[1] (MiRXES Lab. Pte Ltd Singapore)

Room 7 Oct. 2 (Fri.) 9:00-11:30 E

## IS6 Strategy toward development of targeting therapy against cancer stem-like cells
がん幹細胞標的治療の実現へ具体的な道筋

Chairpersons: Noriko Gotoh (Cancer Res. Inst., Kanazawa Univ.)
Suling Liu (Fudan Univ.)
座長：後藤 典子（金沢大・がん研）
Suling Liu (Fudan Univ.)

It is well-known that cancer tissues are composed of very heterogenous cancer cells including cancer stem-like cells (CSCs). CSCs and their niche create the tumor ecosystems in which a variety of dynamic and multi-directional interactions take place among all the components. Some of the interactions are common to the normal stem cells, however, others are specific to CSCs and different from the normal stem cells. It would be ideal to target the latter interaction mechanisms to prevent the side-effects to normal stem cells. Many novel molecular targeting drugs against CSCs are now under development, and clinical trials have been undertaken. However, there are still remaining issues to conduct them in an appropriate manner. In light of basic mechanisms, many more novel and exciting findings have been reported, emphasizing that CSCs ecosystems are being unraveled. In this symposium, we would like to introduce recent advancement of this field and discuss novel potential therapies hoping to eliminate CSCs for completely cure of the disease.

**IS6-1** **DTX2 promotes RUNX1 ubiquitination and deacetylation to suppress the growth of leukemia cells**
Taishi Yonezawa, Toshio Kitamura, Susumu Goyama (IMST., Tokyo Univ.)
**DTX2 は RUNX1 のユビキチン化および脱アセチル化を促進し、白血病細胞の増殖を抑制する**
米澤 大志、北村 俊雄、合山 進（東京大・医科研）

**IS6-2** **Intestinal tumor stem cell specific ablation of Brg1 resulted in reduction of intestinal tumors with increased apoptosis**
Takaaki Yoshikawa, Akihisa Fukuda, Osamu Araki, Munemasa Nagao, Satoshi Ogawa, Yukiko Hiramatsu, Motoyuki Tsuda, Takahisa Maruno, Yuki Nakanishi, Hiroshi Seno (Dept. Gastroenterology & Hepatology, Kyoto Univ.)
**腸腫瘍幹細胞特異的な Brg1 のノックアウトによりアポトーシスが誘導され、腸腫瘍が退縮する**
吉川 貴章、福田 晃久、荒木 理、長尾 宗政、小川 智、平松 由紀子、津田 喬之、丸野 貴久、中西 祐貴、妹尾 浩（京都大・院医・消化器内科学）

**IS6-3** **Specific targeting of chemoresistant slow-cycling colon cancer stem-like cells by NIR-PIT**
Yusuke Kanda, Daisuke Shiokawa, Koji Okamoto (Natl. Cancer Ctr. Res. Inst., Div. Cancer Diff.)
**抗がん剤抵抗性の休止型大腸がん幹細胞を標的とした光免疫療法の構築**
神田 裕介、塩川 大介、岡本 康司（国立がん研セ・研・がん分化制御）

**IS6-4** **Harnessing cell mechanics for nanoparticle-based mechanotargeting of soft cancer stem cells**
Youhua Tan[1], Xi Chen[1,2], Yadi Fan[2], Mo Yang[1,2] ([1]Hong Kong Polytechnic Univ. Shenzhen Res. Inst., [2]Hong Kong Polytechnic Univ.)

**IS6-5** **The cell-of-origin underpins the immune microenvironment of KrasG12D-driven lung adenocarcinoma**
Kate D. Sutherland[1,2], Sarah A. Best[1,2], Sheryl Ding[1,2], Ariena Kersbergen[1], Xueyi Dong[2,3], Ji-Ying Song[4], Yi Xie[3,5], Boris Reljic[6], Kaiming Li[7], James E. Vince[2,8], Vivek Rathi[9], Gavin M. Wright[10], Matthew E. Ritchie[2,3] ([1]Cancer Biol. & Stem Cells Div., WEHI, [2]Dept. Med. Biol., The Univ. of Melbourne, [3]Epigenetics & Development Div., WEHI, [4]Div. Exp. Animal Path., The Netherlands Cancer Inst., [5]Sch. of Life Sci., Fudan Univ., [6]Bio21 Inst., The Univ. of Melbourne, [7]Sch. of Life Sci., Nanjing, Univ., [8]Inflammation Div., WEHI, [9]Dept. Anatomical Path., St. Vincent's Hosp., [10]Dept. Surg., St. Vincent's Hosp.)

**IS6-6** **Development of a novel therapeutic strategy based on actin cytoskeleton dynamics for targeting cancer stem-like cells**
Hiroyuki Nobusue, Hideyuki Saya (Div. Gnene Rgegulation, IAMR, Keio Univ., Sch. Med.)
**がん幹細胞を標的としたアクチン細胞骨格動態に基づく新規治療法の開発**
信末 博行、佐谷 秀行（慶應大・医・先端研・遺伝子）

**IS6-7** **MicroRNA profiling of latently metastasized human breast cancer stem cells.**
Yohei Shimono[1,2], Naoki Shibuya[2,3], Tatsunori Nishimura[4], Noriko Gotoh[4], Yoshihiro Kakeji[3] ([1]Dept. Biochem., Fujita Health Univ. Sch. Med., [2]Div. Mol. Cell. Biol., Kobe Univ. Grad. Sch. Med., [3]Div. Gastrointestinal Surg., Kobe Univ. Grad. Sch. Med., [4]Div. Cancer Cell. Biol., Cancer Res. Inst. Kanazawa Univ.)
**潜在転移ヒト乳がん幹細胞のマイクロ RNA プロファイル**
下野 洋平[1,2]、渋谷 尚樹[2,3]、西村 建徳[4]、後藤 典子[4]、掛地 吉弘[3]（[1]藤田医大・医・生化学、[2]神大・院医・分子細胞生物学、[3]神大・院医・食道胃腸外科学、[4]金沢大・がん研・分子病態）

**IS6-8** **Breast Cancer Stem Cell Heterogeneity and Drug Resistance**
Suling Liu (Shanghai Cancer Ctr., Fudan Univ., Shanghai, China)

Room 8 Oct. 2 (Fri.) 9:00-11:30 E

## S10 Impact of mouse models on cancer biology and therapeutics
がん研究に不可欠なマウスモデル

Chairpersons: Takuro Nakamura (Div. Carcinogenesis, The Cancer Inst., Japanese Foundation for Cancer Res.)
Yasuhiro Yamada (Div. Stem Cell Path., Inst. of Med. Sci., The Univ. of Tokyo)
座長：中村 卓郎（(公財) がん研・研・発がん研究部）
山田 泰広（東京大・医科研・先進病態モデル研究分野）

Mouse models have provided valuable information to study the development and progression of cancers and to test new treatments. Although next-generation sequencing technology has brought remarkable advances in our understanding of the genome-wide profiles of mutations and epigenetic alterations in diverse types of cancer, the functional consequences of the observed genetic/epigenetic aberrations during cancer development are not fully understood, especially at an organismal level. Taking advantage of mouse genetics and genome editing technology in combination with comprehensive analysis of genome composition and epigenetic modifications, recent studies unveiled the impact of genetic/epigenetic aberrations during human cancer development in various organs comprising multiple cell types of the murine counterpart, which also uncovered promising therapeutic targets. This symposium aims to introduce recent progress in cancer research using mouse models and to discuss future challenges.

**S10-1** Analysis of pancreatic cancer development in genetically engineered mice
Hiroshi Seno, Satoshi Ogawa, Ru Chen, Motoyuki Tsuda, Takahisa Maruno, Akihisa Fukuda (Dept. Gastroenterol & Hepatol., Kyoto Univ.)
遺伝子改変マウスを用いた膵がん進展過程の解析
妹尾 浩、小川 智、陳 茹、津田 喬之、丸野 貴久、福田 晃久（京都大・医・消化器内科）

**S10-2** C11orf95 genomic rearrangements dictate oncogenic dependence in supratentorial brain tumors.
Daisuke Kawauchi[1,2,6], Tuyu Zheng[1,2], David_R. Ghasemi[1,2], Konstantin Okonechnikov[1,2], Stefan_M. Pfister[1,2,3], Felix Sahm[1,4,5], Kristian Pajtler[1,2,3] ([1]Hopp-Childrens Cancer Ctr. Heidelberg (KiTZ), Heidelberg, Germany, [2]Div. Pediatric Neurooncology, German Cancer Res. Ctr. (DKFZ), [3]Dept. Pediatric Oncology, Hematology & Immunol., Univ. Hosp. Heidelberg, [4]Clin. Cooperation Unit NeuroPath., German Cancer Res. Ctr. (DKFZ), [5]Dept. NeuroPath., Heidelberg Univ. Hosp., [6]Dept. Biochem. & Cell. Biol., NCNP, Tokyo, Japan.)
C11orf95 関連ゲノム再構成はテント上脳腫瘍の発がんに関与する
川内 大輔[1,2,6]、Tuyu Zheng[1,2]、David_R. Ghasemi[1,2]、Konstantin Okonechnikov[1,2]、Stefan_M. Pfister[1,2,3]、Felix Sahm[1,4,5]、Kristian Pajtler[1,2,3] ([1]ハイデルベルクがん研究セ、[2]ドイツがん研究セ・小児脳腫瘍部門、[3]ハイデルベルク大・病院・小児腫瘍部門、[4]ドイツがん研究セ・神経病理学部門、[5]ハイデルベルク大・病院・神経病理学部門、[6]NCNP 病態生化学部門)

**S10-3** Modeling sarcoma to clarify enhancer reprogramming in disease progression
Miwa Tanaka, Mizuki Homme, Yasuyo Teramura, Yukari Yamazaki, Rikuya Shimizu, Takuro Nakamura (Div. Carcinogenesis, The Cancer Inst., JFCR)
マウスモデルを用いた肉腫の進展におけるエンハンサーリプログラミング機構の解析
田中 美和、本目 みずき、寺村 易予、山崎 ゆかり、清水 六花、中村 卓郎（(公財) がん研・研・発がん）

**S10-4** KDM6A inactivation in germinal center B cells promotes the development of plasma cell neoplasms
Atsushi Iwama (Div. Stem Cell Mol. Med. Inst. Med. Sci. Univ. Tokyo)
ヒストン修飾異常を背景とする多発性骨髄腫の発症機構
岩間 厚志（東京大・医科研・幹細胞分子医学）

**S10-5** Uncovering the metabolic reprogramming of stem cell fates in leukemia
Takahiro Ito (Inst. Frontier Life Med. Sci, Kyoto Univ.)
血液がんモデルによるがん幹細胞研究
伊藤 貴浩（京都大・ウイルス・再生医科学研）

**S10-6** A role of senescence in cell type-specificity of cancer development
Yasuhiro Yamada (Inst. of Med. Sci., The Univ. of Tokyo)
細胞老化による細胞種特異的発がん
山田 泰広（東京大・医科研）



Room 9 Oct. 2 (Fri.) 9:00-11:30 J

## SST3 Challenges to conquer lung cancer by understanding multiple aspects of the disease
肺がん：多面的な理解により克服をめざす

Chairpersons: Takashi Kohno (Div. Genome Biol., Natl. Cancer Ctr. Res. Inst.)
Noboru Hattori (Dept. Mol. & Internal Med., Grad. Sch. of Biomed. & Health Sci., Hiroshima Univ.)
座長：河野 隆志（国立がん研セ・研・ゲノム生物学）
服部 登（広島大・院医・分子内科学）

Lung cancer is the leading cause of cancer-related deaths in worldwide with surgical operation being the most effective treatment for cure. Although the recent clinical application of molecular targeted drugs and immune checkpoint inhibitors has greatly improved the prognosis of inoperable cases, it is still true that advanced lung cancer remains one of the deadliest diseases, confronting us with the importance of prevention and early detection of the disease and development of novel therapeutic strategies. In this session, we invite leading researchers challenging these important issues to present their efforts and actions for the conquest of lung cancer. The topics include molecular pathology, drug resistance, synthetic lethality therapy, early carcinogenesis and endogenous risk factors. We are hoping that this session will attract many researchers studying various fields of cancer and facilitate an active discussion between the presenters and the audience.

**SST3-1** Advances in Lung Cancer Research from pathological point of view
Junya Fujimoto (Dept. Transl. Mol. Path., Texas MD Anderson Cancer Ctr.)
病理学的観点からの最近の肺がん研究における進捗
藤本 淳也（テキサス MD アンダーソンがんセ）

**SST3-2** Circumvention of targeted drug tolerance of lung cancer
Seiji Yano (Div. Med. Oncol., Cancer Res. Inst., Kanazawa Univ.)
肺がんの分子標的薬抵抗性の克服
矢野 聖二（金沢大・がん研・腫瘍内科）

**SST3-3** Somatic mutations in normal bronchial epithelia involved in lung carcinogenesis
Kenichi Yoshida, Peter J. Campbell (Cancer, Ageing & Somatic Mutation, The Wellcome Sanger Inst.)
正常気管支上皮にみられる肺がん発症に関わる体細胞変異
吉田 健一、キャンベル ピーター（ウェルカム・サンガー研）

**SST3-4** A new therapeutic strategy for lung cancer with tumor suppressor gene mutations
Bunsyo Shiotani (Div. Cell. Signal., Natl. Cancer Ctr. Res. Inst.)
がん抑制遺伝子変異肺がんに対する新たな治療戦略
塩谷 文章（国立がん研究セ・研・細胞情報学）

**SST3-5** Identification of genes associated with lung cancer risk in a Japanese population
Kouya Shiraishi, Takashi Kohno (Div. Genome Biol. Natl. Cancer Ctr. Res. Inst.)
日本人の肺発がんリスクに影響を与える遺伝子
白石 航也、河野 隆志（国立がん研セ・研・ゲノム生物）

Room 2 | Live | On Demand

## LS-14 Scrum/10x Genomics
株式会社スクラム/10x Genomics

**Single-cell landscape of antitumor immune responses**
Hiroshi Kagamu (Department of Respiratory Medicine, Saitama Medical University International Medical Center)

Chair: Ken Osaki (10x Genomics)

**がん研究におけるシングルセル解析の有用性**
**Single cell RNAseq からみた腫瘍免疫**
各務 博（埼玉医科大学国際医療センター呼吸器内科）

座長：大崎 研（10x Genomics）

Room 4 | Live | On Demand

## LS-7 FUJIFILM Wako Pure Chemical Corporation
富士フイルム和光純薬株式会社

**An in vitro system for evaluating anti-cancer drugs using patient-derived tumor organoids (F-PDO®)**
Motoki Takagi (Fukushima Medical University)

Chair: Tadashi Kondo (National Cancer Center Research Institute)

**患者由来がんオルガノイド（F-PDO®）を用いた抗がん剤評価システム**

**患者由来がんオルガノイド（F-PDO®）を用いた抗がん剤評価システムと評価システムの提供サービスについて**
高木 基樹（福島県立医科大学）

座長：近藤 格（国立がん研究センター 研究所）

Room 3 | Live | On Demand

## LS-6 Nippon Becton Dickinson Company, Ltd.
日本ベクトン・ディッキンソン株式会社

**Multi-parametric analysis of antigen-specific T cells by using a super-multicolor flow cytometry**
Hideki Ueno (Department of Immunology, Graduate School of Medicine, Kyoto University)

Chair: Keisuke Yuki (BD Biosciences)

**超多色フローサイトメトリーを用いた抗原特異的 T 細胞のマルチパラメータ解析**
上野 英樹（京都大学 大学院医学研究科 免疫細胞生物学）

座長：結城 啓介（日本ベクトン・ディッキンソン㈱ バイオサイエンス事業部）

Room 7 | Live

## LS-8 TAIHO PHARMACEUTICAL CO., LTD.
大鵬薬品工業株式会社

**Management and selection method of advanced gastric cancer chemotherapy**
Hiroaki Tanioka (Department of Clinical Oncology, Kawasaki Medical School)

Chair: Tatsuya Ioka (Yamaguchi University Hospital, Department of Oncology Center)

**多様化する胃癌薬物療法～薬剤選択からマネジメントまで～**
谷岡 洋亮（川崎医科大学 臨床腫瘍学教室）

座長：井岡 達也（山口大学医学部附属病院 腫瘍センター）

## Special Symposia

Room 1 Oct. 2 (Fri.) 13:00-15:30 J

### SS4 Interactions of AI and cancer research and precision medicine
AIとがん研究･医療との対話

Chairpersons: Yusuke Nakamura (CPM Ctr., JFCR)
Satoru Miyano (Human Genome Ctr., Inst. of Med. Sci., The Univ. of Tokyo)
座長：中村 祐輔（(公財）がん研・プレシジョン医療研究セ）
宮野 悟（東京大・医科研・ヒトゲノム解析セ）

The introduction of artificial intelligence (AI) is rapidly progressing in the medical fields. AI can help to analyze CT and MRI images, pathological images, clinical data and genomic data etc. to provide personalized best medical care. At present we need to construct a large-scale medical database and extract useful information from it. Although there are discussions on the processes to collect large-scale clinical information and genomic information data, it is essential to build a highly secure medical information database in order for patients to cooperate without any concerns for privacy issues. As for the data management method, a secret sharing method is adopted, and it is necessary that individual information is stored in multiple servers in the cloud instead of in one location. In addition, a secret calculation method is adopted even when integrating them for statistical processing such as calculation. Today, various cutting-edge technologies are rushing to research and clinical sites such as precision medicine and genomic medicine. We would like to introduce an outline of such AI programs.

**SS4-1** Implementation of AI in the medical system
Yusuke Nakamura (CPM Ctr., JFCR)
内閣府 SIP「AI ホスピタル」プロジェクト
中村 祐輔（(公財）がん研 CPM セ）

**SS4-2** Cutting edge of the colonoscopy - Paradigm shift of the diagnosis approach -
Toyoki Kudo, Shin-ei Kudo, Yuichi Mori, Masashi Misawa (Digestive Disease Ctr., Showa Univ. Northern Yokohama Hosp.)
大腸内視鏡の最先端　～診断アプローチのパラダイムシフト～
工藤 豊樹、工藤 進英、森 悠一、三澤 将史（昭和大・横浜市北部病院・消化器セ）

**SS4-3** Development of fine-tuning method of MR images of gliomas to normalize image differences among facilities
Satoshi Takahashi[1,2], Masamichi Takahashi[3,4], Manabu Kinoshita[5], Mototaka Miyake[6], Risa Kawaguchi[2], Kazuma Kobayashi[1,2], Jun Sese[2], Koichi Ichimura[4], Yoshitaka Narita[3], Ryuji Hamamoto[1,2] ([1]Cancer Translational Res. Team, RIKEN AIP, [2]Div. Mol. Modification & Cancer Biol., NCC, Inst., [3]Dept. Neurosurg. & Neuro-Oncology, Natl. Cancer Ctr. Hosp., [4]Div. Brain Tumor Translational Res., NCC, Inst., [5]Dept. Neurosurg., Osaka Univ. Grad. Sch. of Med., [6]Dept. Diagnostic Radiology, Natl. Cancer Ctr. Hosp.)
多施設間の画像差を埋める Fine-tuning 方法の開発
高橋 慧[1,2]、高橋 雅道[3,4]、木下 学[5]、三宅 基隆[6]、河口 梨紗[2]、小林 和馬[1,2]、瀬々 潤[2]、市村 幸一[4]、成田 善孝[3]、浜本 隆二[1,2]（[1]理研・革新知能統合研究セ、[2]国立がん研セ・分子修飾制御学分野、[3]国立がん研セ・中央病院・脳脊髄腫瘍科、[4]国立がん研究セ・脳腫瘍連携研究分野、[5]大阪大・医・脳神経外科、[6]国立がん研セ・中央病院・放射線診断科）

**SS4-4** Natural Language Processing and Explainable AI for Basic Cancer Research and Cancer Genomic Medicine
Satoru Miyano (M&D Data Sci. Ctr., Tokyo Med. & Dent. Univ.)
がん研究・医療のための自然言語処理と説明可能 AI
宮野 悟（東京医歯大・M&D データ科学セ）

**SS4-5** Quantitative evaluation of chromatin pattern using mathematical algorithm
Kazuaki Nakane[1], Yasuyoshi Tsutsumi[2], Yuhki Yokoyama[1], Eiichi Morii[1], Sachiko Nangumo[1], Hirofumi Yamamoto[1] ([1]Osaka Univ. Med., [2]Natl. Inst. of Tech., Oshima College)
数理的アルゴリズムを用いたクロマチンパターンの定量評価
中根 和昭[1]、堤 康嘉[2]、横山 雄起[1]、森井 英一[1]、南雲 サチ子[1]、山本 浩文[1]（[1]大阪大・医、[2]大島商船高等専門学校）

## Panel Discussion

Room 1 Oct. 2 (Fri.) 15:30-17:30 J

### PD Cancer research in the Japanese medical systems
日本の医学・医療システムにおけるがん研究

Chairpersons: Ryuzo Ueda (Tumor Immunol., Aichi Med. Univ. Sch. of Med.)
Tetsuo Noda (Cancer Inst., Japanese Foundation for Cancer Res.)
座長：上田 龍三（愛知医大・医・腫瘍免疫寄附講座）
野田 哲生（(公財）がん研・がん研）

The pandemic of COVID-19 is terribly hitting the world since the end of 2019 and we are right in the middle of it now. Japanese medical systems have suffered from many issues in a wide variety of areas, such as career development, research promotion and medical care system itself. Medical systems for cancer treatment and research are no exception. In a face of new medical systems coming after this corona era, it is our task to propose innovative strategies which would realize ideal medical systems truly valuable for future cancer treatment and research in Japan. We expect to have fruitful discussions with outstanding invited speakers and JCA members.

**PD-1** Current status and problems of medical system in Japan
Morito Monden (Sakai City Med. Ctr.)
日本の医療のシステムの現状と問題点
門田 守人（堺市立病院機構）

**PD-2** Recent and future issues on training of physician scientists engaged in cancer research
Chikashi Ishioka[1,2] ([1]Dept. Clin. Oncol., Tohoku Univ. Grad. Sch. Med., [2]Dept. Med. Oncol., Tohoku univ. Hosp.)
医師がん研究者養成に関する現在と将来に向けての課題
石岡 千加史[1,2]（[1]東北大・医・臨床腫瘍学分野、[2]東北大・病院・腫瘍内科）

**PD-3** Future Perspective and the Role of Japanese Cancer Association (JCA) in Cancer Research of Japan
Hitoshi Nakagama (Natl. Cancer Ctr.)
がん研究における学会の在り方
中釜 斉（国立がん研セ）

**PD-4** Tasks for cancer centers in cancer treatment and research promotion in Japan.
Tetsuo Noda (Cancer Inst. of JFCR)
日本のがん医療・がん研究におけるがん専門機関の役割
野田 哲生（(公財）がん研・研）

**PD-5** Next step of Cancer Research, from the health policy perspective
Masami Sakoi (Health Policy Bureau Ministry of Health, Labour & Welfare)
今後のがん研究に向けて ― 医療政策の視点から
迫井 正深（厚生労働省医政局）

**PD-6** Japanese contributions to oncology drug development and regulatory approval around the world
Yasuhiro Fujiwara, Takahiro Nonaka (Pharmaceuticals & Med. Devices Agency (PMDA))
抗がん剤開発（薬事承認）における日本の貢献度
藤原 康弘、野中 孝浩（独立行政法人医薬品医療機器総合機構 (PMDA)）

## Symposia

Room 2 Oct. 2 (Fri.) 13:00-15:30 E

### S11 Recent progress in anti-cancer therapeutics
進化するがん創薬

Chairpersons: Hiroaki Suga (Grad. Sch. of Sci., The Univ. of Tokyo)
Mikihiko Naito (Devision of Mol. Target & Gene Therapy Products, Natl. Inst. of Health Sci.)
座長：菅 裕明（東京大・院理・化学専攻）
内藤 幹彦（国立衛研・遺伝子医薬部）

The modalities for anticancer therapeutics are progressively developed, which include novel technologies to discover functional molecules as well as immunotherapy and gene therapy. Accordingly, it is increasingly expected to develop innovative drugs against cancers. In this symposium, we are very honor to invite Dr. Kevan Shokat, University of California San Francisco, who is a world-renowned researcher for innovative drug development against Ras protein. After the introductory talk by Dr. Suga, a co-chairperson of this session, Dr. Shokat will present a novel approach against Ras. Then, Dr. Ikeda in Nagasaki University will present a recent progress in CAR-T therapy, and Dr. Todo in Tokyo University will make a talk on the development of oncolytic viruses. Finally, Dr. Naito in National Institute of Health Sciences will overview novel approaches for targeted protein degradation and their applications for anticancer drug development. We hope these presentations will inspire the researches for many audiences.

**S11-1** **Revolutionizing the therapeutics by nonstandard peptides**
Hiroaki Suga (Dept. Chem, Sci., U Tokyo)
**特殊ペプチドによる創薬革命**
菅 裕明（東京大・理・化学）

**S11-2** **Strategies for Drugging Undruggable Targets in Oncology: From K-Ras to Drug Resistance**
Kevn M. Shokat[1] ([1]Investigator, Howard Hughes Med. Inst., [2]Professor, Dept. Chemistry, UC Berkeley)

**S11-3** **New era of gene-modified T cell therapy**
Hiroaki Ikeda (Dept. Oncology, Nagasaki Univ., Grad. Sch. Biomed. Sci.)
**遺伝子改変Ｔ細胞療法の新展開**
池田 裕明（長崎大・医歯薬・腫瘍医学）

**S11-4** **Development of anti-cancer virus products using genetically engineered viruses**
Tomoki Todo (Div. Innovative Cancer Therapy, Inst. Med. Sci., Univ. Tokyo)
**遺伝子組換えウイルスを用いた抗がんウイルス創薬**
藤堂 具紀（東京大・医科研・先端がん治療分野）

**S11-5** **Targeted Protein Degradation by Small Molecules**
Mikihiko Naito (Div. Org. Chem., Natl. Inst. Health Sci.)
**標的タンパク質の選択的分解を誘導する化合物**
内藤 幹彦（国立衛研・有機）

## Special Programs

Room 2 Oct. 2 (Fri.) 15:30-17:30 J

### SP4 The era of new types of tobacco: Science and Social Impact (JCA-JEA Joint Symposium)
新型タバコの科学と社会インパクト（日本癌学会・日本疫学会 合同企画）

Chairpersons: Keitaro Matsuo (Div. Cancer Epidemiology & Prevention, Aichi Cancer Ctr.)
Toshikazu Ushijima (Div. Epigenomics, Natl. Cancer Ctr. Res. Inst.)
座長：松尾 恵太郎（愛知県がんセ・がん予防研究分野）
牛島 俊和（国立がん研セ・研・エピゲノム解析分野）

It has been a long time since it was found that tobacco causes various diseases including cancer. Numerous reports are showing that tobacco is causing substantial harm in human population. Various measures have been taken to recude harm by tobacco around the world.
New types of cigarettes are introduced to the market by tobacco industries as less dangerous tobacco products than older forms. The way it was introduced is very similar to the way when filtered cigarette was introduced in the market. Due to shorter years since introduction of new types of tobacco products, its long-term health effects have not been well clarified. The WHO is alarming all forms of tobacco products, including new tobacco, to be harmful and subject to regulation.
This session was planned to present the latest information about net types of tobacco on health from the experts in the field and to discuss future researches.
Please note that this session is jointly held by the Japanese Cancer Association and the Japanese Epidemiological Association.

**SP4-1** **New types of tobacco in Japan - from scientific and social perspectives**
Kota Katanoda (Div. Stat. Integr. Ctr. Info. Natl. Canc. Ctr.)
**新型タバコとの科学と社会インパクトを取り巻く状況**
片野田 耕太（国立がん研セ・情報セ・がん統計部）

**SP4-2** **Latest information on component analysis of new tobacco products**
Yohei Inaba (Natl. Inst. Public Health)
**新型タバコの成分分析の最新情報**
稲葉 洋平（国立保健医療科学院）

**SP4-3** **E-cigarette, or Vaping, Product Use-Associated Lung Injury (EVALI)**
Haruyuki Kawai (Dept. Internal Med., Okayama Saiseikai General Hosp.)
**電子タバコによる急性肺障害**
川井 治之（岡山済生会総合病院・内科）

**SP4-4** **Japan's New Tobacco Products Problem: An Update and Prospects for Cancer Research**
Takahiro Tabuchi (Osaka Internatl. Cancer Inst., Cancer Control Ctr.)
**日本の新型タバコ問題：最新情報 UPDATE とがん研究への展望**
田淵 貴大（大阪国際がんセ・がん対策セ）

**SP4-5**
Taiki Yamaji (Ctr. for Public Health Sci., Natl. Cancer Ctr.)
**指定発言**
山地 太樹（国立がん研究セ・社会と健康研究セ）

Room 3 Oct. 2 (Fri.) 13:00-15:30 E

## S12 Single cell biology of cancer
がんの一細胞生物学

Chairpersons: Tatsuhiro Shibata (Lab. of Mol. Med., The Inst. of Med. Sci., The Univ. of Tokyo)
Hiroyuki Aburatani (Res. Ctr. for Advanced Sci. & Tech., The Univ. of Tokyo)
座長：柴田 龍弘（東京大・医科研・ゲノム医科学分野）
油谷 浩幸（東京大・先端研・ゲノムサイエンス）

Recently single-cell genomics has improved our understanding of the complex and unique biology of human cancer at the highest resolution. These include the epigenetic and clonal heterogeneities of cancer cell populations as well as cancer stromal cells, mutual interactions of cancer and stromal cells, spatial transcriptional patterns of immune and stromal cells in the cancer tissues, and metastatic process of single cancer cells. This field is also rapidly changing by the development and application of new technologies such as spatial transcriptomic analysis and comprehensive cell profiling in the whole body. This session invites seven experts in this filed and they will present the most cutting-edge research, which will suggest new directions on how we can apply single-cell analysis to understand the biology of cancer. We hope that this session will provide any help for the audience to learn these new technologies and utilize them for future research.

**S12-1** **Epigenetic heterogeneity of cancer**
Hiroyuki Aburatani (Genome Sci. Lab., RCAST, The Univ. of Tokyo)
**がん細胞集団のエピゲノム不均一性**
油谷 浩幸（東京大・先端研・ゲノムサイエンス）

**S12-2** **Early Clonal evolution of myeloid malignancies**
Masahiro Nakagawa[1,2], Ryosaku Inagaki[1,2,3], Yasuhito Nannya[1], Lanying Zhao[1,4], Yotaro Ochi[1], June Takeda[1], Xingxing Qi[1], Akinori Yoda[1], Ayana Kon[1], Nobuyuki Kakiuchi[1], Hideki Makishima[1], Shinichi Matsuda[5], Seishi Ogawa[1,4,6] ([1]Dept. Path. & Tumor Biol., Kyoto Univ., [2]DSK project, Med. Innovation Ctr., Kyoto Univ., [3]DSP Cancer Inst., Sumitomo Dainippon Pharma Co., Ltd., [4]WPI ASHBi, Kyoto Univ., [5]Dept. Orthopedic Surg. in Kyoto Univ. Hosp., [6]Dept. Med., HERM, Karolinska Inst.)
**骨髄系腫瘍の早期クローン進展の解析**
中川 正宏[1,2]、稲垣 良作[1,2,3]、南谷 泰仁[1]、趙 蘭英[1,4]、越智 陽太郎[1]、竹田 淳恵[1]、戚 星星[1]、依田 成玄[1]、昆 彩奈[1]、垣内 伸之[1]、牧島 秀樹[1]、松田 秀一[5]、小川 誠司[1,4,6]（[1]京都大・腫瘍生物学講座、[2]京都大・MIC DSK プロジェクト、[3]大日本住友製薬・がん創薬研、[4]京都大・WPI・ヒト生物学高等研究拠点、[5]京都大・整形外科学講座、[6]カロリンスカ研・医・血液・再生医療）

**S12-3** **Dissecting multicellular ecosystems of HTLV-1 infection and ATL by multi-omics single cell analysis**
Junji Koya[1], Yuki Saito[1,2], Takuro Kameda[3], Yasunori Kogure[1], Marni B. McClure[1], Sumito Shingaki[1], Kota Yoshifuji[1,4], Mariko Tabata[1,5], Kazuya Shimoda[3], Keisuke Kataoka[1] ([1]Div. Molecul. Oncol., Natl. Cancer Ctr. Res. Inst., [2]Dept. Gastro., Keio Univ. Sch. of Med., [3]Div. Gastro & Hemato., Univ. of Miyazaki., [4]Dept. Hamato., Grad. Sch. Med., Tokyo, Med. & Dent. Univ., [5]Dept. Uro., Grad. Sch. Med., Univ. Tokyo)
**マルチオミクス単一細胞解析による HTLV-1 感染状態および ATL における細胞動態の網羅的解明**
古屋 淳史[1]、斎藤 優樹[1,2]、亀田 拓郎[3]、木暮 泰寛[1]、Marni B. McClure[1]、新垣 清登[1]、吉藤 康太[1,4]、田畑 真梨子[1,5]、下田 和哉[3]、片岡 圭亮[1]（[1]国立がん研セ・研・分子腫瘍、[2]慶應大・医・消内、[3]宮崎大・医・血内、[4]東京医歯大・医・血内、[5]東京大・医・泌尿）

**S12-4** **Cancer - immune cell interactions drive transitions to mesenchymal-like states in glioblastoma**
Toshiro Hara (Dept. Path., MGH/ Broad)
**癌間質相互作用による膠芽腫不均一性の制御**
原 敏朗（マサチューセッツ総合病院/ブロード研）

**S12-5** **Identification of transcriptomic and multi-omics network modules of cancers using spatial transcriptome analysis**
Ayako Suzuki, Satoi Nagasawa, Yutaka Suzuki (Grad. Sch. of Front. Sci., Univ. of Tokyo)
**空間的トランスクリプトーム解析技術を駆使した多層オミクスネットワークモジュールによる局所がん組織の新規層別化**
鈴木 絢子、永澤 慧、鈴木 穣（東京大・新領域）

**S12-6** **Single cell analysis of the stomach**
Hiroto Katoh, Daisuke Komura, Ayumu Tsubosaka, Haruki Kokubo, Shumpei Ishikawa (Dept. Preventive Med., Grad. Sch. Med., The Univ. of Tokyo.)
**胃のシングルセル解析**
加藤 洋人、河村 大輔、坪坂 歩、古久保 宙希、石川 俊平（東京大・院医・衛生学分野）

**S12-7** **Whole-organ quantitative analysis of cancer metastasis with single cell resolution**
Shimpei Kubota, Kei Takahashi, Jun Nishida, Shogo Ehata, Kohei Miyazono (Dept. Mol. Pathol., The Univ. of Tokyo)
**組織透明化による一細胞解像度での癌転移解析**
久保田 晋平、高橋 恵生、西田 純、江幡 正悟、宮園 浩平（東京大・院医・分子病理学分野）

## JCA-ISEV Special Joint Symposium

Room 3 Oct. 2 (Fri.) 15:30-17:30 E

### ISEV JCA-ISEV Special Joint Symposium
日本癌学会・国際細胞外小胞学会　特別合同シンポジウム

Chairpersons: Kenneth W. Witwer (Mol. & Comparative PathoBiol., Neurology, & Cell. & Mol. Med., Johns Hopkins Univ. Sch. of Med.)
Hidetoshi Tahara (Grad. Sch. of Biomed. & Health Sci., Hiroshima Univ.)

座長：Kenneth W. Witwer (Mol. & Comparative PathoBiol., Neurology, & Cell. & Mol. Med., Johns Hopkins Univ. Sch. of Med.)
田原 栄俊（広島大・院医・細胞分子生物学）

**ISEV-1** **Rigor and Standardization Efforts of the International Society for Extracellular Vesicles**
Kenneth E Witwer (Dept. Mol. & Comparative Pathobiol. & Neurology, JHUSOM)

**ISEV-2** **Role of Secreted Exosomes in Cancer Aggressiveness**
Alissa M. Weaver (Dept. of Cell and Developmental Biology, Vanderbilt University Medical School)

**ISEV-3** **TBD**
Irina. Nazarenko (Institute for Infection Prevention and Hospital Epidemiology, Medical Center–University of Freiburg)

**ISEV-4** **Targeting DUSP2-mediated extracellular vesicle-VEGF-C secretion ameliorates pancreatic cancer early dissemination**
Sean Tsai[2], Chu-An Wang[1] ([1]Inst. Molecular Medicine, College of Medicine, NCKU, [2]Dept. of Physiology, college of Medicine, NCKU)

**ISEV-5** **Comprehensive analyses of small extracellular vesicles carrying nucleic acids in ovarian cancer**
Akira Yokoi[1], Takahiro Ochiya[2] ([1]Dept. Obst. Gyne., Nagoya Univ. Sch. Med., [2]Mol. Cell. Med., Tokyo Med. Univ.)
**卵巣がんにおける核酸搭載細胞外小胞の包括的解析**
横井 暁[1]、落谷 孝広[2]（[1]名古屋大・医・産婦人科、[2]東京医大・分子細胞治療）

## Symposia

Room 4 Oct. 2 (Fri.) 13:00-15:30 E

### S13 Real world of tumor microenvironment
がん微小環境のリアルワールド

Chairpersons: Atsushi Ochiai (Exploratory Oncology Res. & Clin. Trial Ctr., Natl. Cancer Ctr.)
Kyoko Hida (Vascular Biol. & Mol. Path., Grad. Sch. of Dent. Med., Hokkaido Univ.)

座長：落合 淳志（国立がん研セ・先端医療開発セ）
樋田 京子（北海道大・院歯・血管生物分子病理学）

Tumor tissue consists of not only a heterogeneous population of cancer cells, but also a various resident and infiltrating host cells, and extracellular matrix, known as the tumor microenvironment. The accumulated evidence has revealed that tumor stroma cells are affected by cancer cells and communicate with them. Furthermore, the tumor microenvironment can also influence cancer progression and it determines the therapeutic responses or resistance. It is surely true that tumor microenvironment is no longer a supporting role, but is in an important position in cancer treatment strategies.
We need to approach the real world of a microenvironment in order to utilize the results of basic research so far as scientific evidence and to utilize them in the clinical field of cancer.
At this symposium, five experts from CAF, immunology, macrophages, blood vessels, and nervous system will be invited to give a lecture. We would like each presenter to introduce the recent research results, and at this symposium, and would like to discuss how control of the tumor microenvironment could be used in cancer treatment strategies.

**S13-1** **The significance of cancer associated fibroblasts in tumor re-progression in post-chemotherapy tumor microenvironment**
Genichiro Ishii (Dept. Path., Natl. Cancer Ctr. Hosp. East, Natl. Cancer Ctr.)
**化学療法後の微小環境におけるがん関連線維芽細胞の機能解析**
石井 源一郎（国立がん研究セ・東病院・病理・臨床検査科）

**S13-2** **The significance of macrophages in cancer progression and immune response**
Yoshihiro Komohara (Dept. Cell Path., Kumamoto Univ.)
**がん病態におけるマクロファージの役割と治療標的としての可能性**
菰原 義弘（熊本大・細胞病理学）

**S13-3** **The role of tumor endothelial cells in the immune environment**
Kyoko Hida (Vasc. Biol. Mol. Biol., Hokkaido Univ. Grad. Sch. of Dent. Med.)
**腫瘍血管内皮細胞がもたらすがん免疫環境への影響**
樋田 京子（北海道大・院歯・血管生物分子病理）

**S13-4** **Cancer and nerves interaction: toward "Caner Neural Therapy"**
Atsunori Kamiya (Dept. Cell. Physiol., Okayama Univ. Med. Sch.)
**がん神経連関: がん神経医療を目指して**
神谷 厚範（岡山大・医・細胞生理学）

**S13-5** **Proposal for novel immunological classification of lung cancer based on the molecular basis of tumor microenvironment**
Kazunori Aoki[1], Yukari Nishito[2], Hideaki Mizuno[2], Atsushi Ochiai[3] ([1]Natl. Cancer Res. Ctr., Res. Inst., Dept. Immune Med., [2]Chugai Pharm. Co. Ltd., Discovery Tech. Dept., [3]Natl. Cancer Res. Ctr., EPOC)
**肺がん免疫微小環境の分子基盤解明に基づいた、新たな免疫学的分類の提唱**
青木 一教[1]、西藤 ゆかり[2]、水野 英明[2]、落合 淳志[3]（[1]国立がん研究セ・研・免疫創薬、[2]中外製薬(株)・創薬基盤研究部、[3]国立がん研究セ・先端医療開発セ）

## Special Programs

Room 4 Oct. 2 (Fri.) 15:30-17:30 J

### SP5 Open debate on breakthroughs of cancer research in next decades
若手･融合がもたらすがん研究ブレークスルー

Chairpersons: Shunsuke Kon (Div. Development & Aging, Tokyo Univ. of Sci., Res. Inst. for Biomed. Sci.)
Satoshi Yamazaki (Stem cell Biol., The Univiersity of Tokyo)
Nobuyuki Onishi (Life Sci. Res. Ctr./ Div. Gene Regulation, Inst. for Advanced Med. Res. (IAMR), Tech. Res. Lab., Shimadzu Corporation/ Keio Univ. Sch. of Med.)

座長：昆 俊亮（東京理科大・生命医研・発生及び老化研究部門）
山崎 聡（東京大・幹細胞生物学分野）
大西 伸幸（株式会社島津製作所・基盤技術研／慶應大・医・ライフサイエンス研／先端研・遺伝子制御研究部門）

'Wakate Tokubetsu-Kikaku', one of the unique symposia among the annual meeting of the Japanese Cancer Association, has been held since 2017, and aimed to bring together young cancer researchers to do open debate on breakthroughs of cancer research and has received good notices from audiences. This year's symposium will also get several young leaders with diverse fields of expertise in cancer research together to discuss on innovative and epoch-making basic cancer researches, diagnosis and treatments that we would develop in the next decades. Profound improvements in cancer screening, diagnosis and treatment have been accomplished through scientific and technical advancements. For instance, the availability and affordability of sequencing genetic information has given us valuable information. Another major leap forward came with the cancer immunotherapy by utilizing immune check point inhibitors. Yet, cancer still occupies the first place in the ranking of deaths in our nation as the number of deaths caused by cancer reached 380,000 in 2019. Thus, the posture that young researchers engaged in cancer issues put and collaborate together more closely to fight against cancer keeps required. Unfortunately, the virtual meeting will take place due to COVID-19 on this symposium. However, we will surely present a lively discussion, and it will be engrossing to see how we will share a new vision on cancer biology in the next era.

**SP5-1** Yoshihiro Hayakawa (Section of Host Defenses, Institite of Natural Med., Univ. of Toyama)
早川 芳弘（富山大・和漢研・生体防御学領域）

**SP5-2** Atsushi Enomoto (Tumor Path./ Mol. Path., Nagoya Univ. Grad. Sch. of Med.)
榎本 篤（名古屋大・院医・腫瘍病理学）

**SP5-3** Takeo Kosaka (Dept. Urology, Keio Univ. Sch. of Med.)
小坂 威雄（慶應大・医・泌尿器科学教室）

**SP5-4** Yoshikane Kikushige (Ctr. for Cell. & Mol. Med., Kyushu Univ. Hosp.)
菊繁 吉謙（九州大・病院・遺伝子細胞療法部）

**SP5-5** Takahiro Kuchimaru (Ctr. for Mol. Med., Jichi Med. Univ.)
口丸 高弘（自治医大・分子病態治療研究セ）

**SP5-6** Yoku Hayakawa (Gastroenterology, The Univ. of Tokyo Hosp.)
早河 翼（東京大・医・附属病院・消化器内科）

## International Sessions

Room 5 Oct. 2 (Fri.) 13:00-15:30 E

### IS7 Beyond CD19, now aim at solid cancers?
CAR-T 細胞；固形がんの攻略

Chairpersons: Hiroshi Fujiwara (Dept. Personalized Cancer Immunotherapy, Mie Univ. Grad. Sch. of Med.)
Zonghai Li (Shanghai Cancer Inst. State Key Lab. of Oncogenes & related genes)

座長：藤原 弘（三重大・院医・個別化がん免疫治療学）
Zonghai Li (Shanghai Cancer Inst. State Key Lab. of Oncogenes & related genes)

In contrast to B-lymphoid blood cancers, CAR-T therapy against solid cancers still faces challenges, which are mainly composed of paucity of rational targets and functional deterioration in immuno-suppressive tumor microenvironment. To address those issues, huge efforts continues to be exerted from a variety of perspectives.
In this context, this international session, co-chaired by prof. Li and I, aim to provide an opportunity for audience to get a leading-edge knowledge from experts and discuss with them. I will focus on the target antigen selection and immune cells CAR gene-modified. Dr. Yagyu will present their CAR-T strategy using *piggyBac* transposon technology. Dr. Kagoya will focus on epigenetic and metabolic aspects of CAR-T cells. Prof. Wang will present their excellent CRISPR/Cas9 technology, especially targeting TGF β signaling. Prof. Shin will show their novel findings regarding the resistance to PD-1 blockade. Finally, prof. Li will present their established system for target choice, and attempt to manage CAR-T cell exhaustion.
We believe all presents will have to help audience to understand what's actually going on now in this field.

**IS7-1** **CAR-T bioengineering for solid cancers; choice of therapeutic targets and immune cells engineered.**
Hiroshi Fujiwara (Dept. Personalized Cancer Immunother., Mie Univ., Grad., Sch. Med.)
**固形がんに対する CAR-T 細胞バイオエンジニアリング；標的分子とエフェクター細胞の視点から**
藤原 弘（三重大・院・個別化がん免疫治療学）

**IS7-2** ***piggyBac* transposon-mediated CAR-T cells for solid tumors - A promising and realistic approach for clinical application**
Shigeki Yagyu (Kyoto Pref. Univ. of Med., Dept. Pediatrics)
**固形腫瘍に対するピギーバックトランスポゾン遺伝子改変 CAR-T 細胞療法の開発**
柳生 茂希（京都府立医大・院医小児科学）

**IS7-3** **Epigenetic and metabolic modification of CAR-T cells for optimal adoptive immunotherapy**
Yuki Kagoya (Div. Immune Response, Aichi Cancer Ctr. Res. Inst.)
**エピジェネティクス・代謝改変による CAR-T 細胞療法の改良**
籠谷 勇紀（愛知県がんセ・腫瘍免疫応答研究分野）

**IS7-4** **Regulation of progenitor-like and terminally exhausted T cells**
Eui-Cheol Shin (Grad. Sch. of Med. Sci. & Engineering, KAIST)

**IS7-5** **Enhancing CAR T-cell metabolic fitness to improve anti-tumor function in solid tumors**
Roddy O'Connor (Path. & Lab. Med., Univ. of Pennsylvania)

**IS7-6** **Challenges and Opportunities of CAR-T cell therapy against solid tumors**
Zonghai Li[1] ([1]State Key Lab. of Oncogenes & Related Genes, [2]Shanghai Cancer Inst., [3]Renji Hosp., [4]Shanghai Jiaotong Univ. Sch. of Med., [5]CARsgen Therap.)

## International Sessions

Room 7 Oct. 2 (Fri.) 13:00-15:30 E

### IS8 Role of redox-active metals for the prevention and treatment of cancer in the era of precision medicine
精密医療時代のがん予防・治療におけるレドックスアクティブ・メタルの役割

Chairpersons: Shinya Toyokuni (Dept. Path. & Biol. Resp. Nagoya Univ., Sch. Med.)
Des R Richardson (Univ. of Sydney & Bosch Inst.)
座長：豊國 伸哉（名古屋大・医・生体反応病理）
Des R Richardson (Univ. of Sydney & Bosch Inst.)

Cancer is one of the leading causes of mortality worldwide. Cancer is understood as the disease of the genome, and indeed astronomical number of mutations were reported with NGS until now. But, it is not easy to respond to each mutation with the idea of precision medicine. Considering the evolution of the life, cancer can be understood as iron addiction with ferroptosis-resistance. In this symposium we seek to understand the carcinogenesis from the context of cutting-edge redox biology and introduce several novel trials to specifically kill cancer cells with redox-active metals or with advanced redox chemistry and nanotechnology. Des Richardson would discuss on targeting cellular signaling to inhibit tumor cell metastasis and growth from the viewpoint of iron and NDRG1 connection. Guangjun Nie would discuss on the nanoformulation of iron chelators, which are effective in various animal models. Sally-Ann Poulsen would report that carbonic anhydrase XII inhibitors overcome drug resistance in tumor cells. Yuichi Hara would discuss on the role of iron in hepatocarcinogenesis. Finally, Fumiya Ito would report on the role of iron in asbesbes-induced mesothelial carcinogenesis.

**IS8-1** **Role of the novel NDRG1-MIG6 axis in down-regulating the epidermal growth factor receptor and other tyrosine kinases**
Des Richardson (Griffith Inst. for Drug Discovery, Brisbane, Australia)

**IS8-2** **Intelligent Nanomedicines: Nanochelator of iron for improved iron removal efficacy in various disease models**
Guangjun Nie[1,2] ([1]Natl. Ctr. for NanoSci. & Tech., China, [2]Univ. of Chinese Academy of Sci.)

**IS8-3** **Overcoming P-glycoprotein mediated drug resistance in glioblastoma**
Sally-Ann Poulsen (GRIDD, GU)

**IS8-4** **Iron loss induce-mitophagy via mitochondrial ferritin**
Yuichi Hara[1], Athushi Tanaka[2], Izumi Yanatori[3], Keisuke Hino[1] ([1]Dept. Hepatology & Pancreatology, Kawasaki Med. Sch., [2]Res. Inst. of Med. Sci., Yamagata Univ. Sch. of Med., [3]Dept. Path. & Biological Responses, Nagoya Univ.)
**鉄欠乏はミトコンドリアフェリチンを介してマイトファジーを誘導する**
原 裕一[1]、田中 敦[2]、簗取 いずみ[3]、日野 啓輔[1]（[1]川崎医科大・肝胆膵内科学、[2]山形大・医・メディカルサイエンス、[3]名古屋大・生体反応病理学）

**IS8-5** **Mechanism of asbestos-induced carcinogenesis via dysregulation of redox-active iron**
Fumiya Ito, Shinya Toyokuni (Dept. Path. & Biol. Resp. Nagoya Univ., Sch. Med.)
**レドックス活性鉄の制御不全を介したアスベストによる発がん機構**
伊藤 文哉、豊國 伸哉（名古屋大・医・生体反応病理）

## Symposia

Room 8 Oct. 2 (Fri.) 13:00-15:30 E

### S14 Elucidation of cancer etiology and prevention strategies based on mechanisms
発がんの要因解明とメカニズムを基盤とした予防戦略

Chairpersons: Dai Nakae (Lab. of Food Safety Assessment Sci., Dept. Nutritional Sci. & Food Safety, Faculty of Applied Biosci., Tokyo Univ. of Agriculture)
Yukari Totsuka (Div. Carcinogenesis & Prevention, Natl. Cancer Ctr. Res. Inst.)
座長：中江 大（東京農大・応用生物・食品安全健康学科・食品安全評価学研究室）
戸塚 ゆ加里（国立がん研セ・研・発がん・予防研究分野）

It is well known that environmental factors substantially contribute to human cancer development. Cancer research, including recently progressed omics studies and genomic analyses, has been widely and deeply revealing genetic/epigenetic alterations in proto-oncogenes and/or tumor suppressor genes during the course of the development and progression of human cancers. These efforts give us fruit as innovation for cancer treatment strategies. Nevertheless, it must be emphasized that even such innovative treatments have limitations and are not necessarily effective for all cancer patients and cancer types. In order to overcome these limitations, the concept of cancer prevention has been attracting attention to prevent the morbidity of cancers, and to reduce their mortality rate. This concept is now being updated to become precision cancer prevention. In the present symposium, 9 distinguished speakers will introduce the latest topics concerning the symposium title, the elucidation of cancer etiology and prevention strategies based on mechanisms, which include epidemiological findings, the relationship between environmental factors and human carcinogenesis with their underlying molecular mechanisms, and the current status of the evidence-based strategies of precision cancer prevention. We hope that this symposium will be a good opportunity to learn the current status and to discuss future perspectives of this new paradigm, precision cancer prevention.

**S14-1** **Prospects for elucidating the cancer etiology and prevention by multidisciplinary approach**
Yukari Totsuka (Dept. Cancer Model Development, Natl. Cancer Ctr. Res. Inst.)
**集学的アプローチによるがんの要因解明と予防研究への展望**
戸塚 ゆ加里（国立がん研セ・研・がんモデル開発部門）

**S14-2** **Mutational signature analysis elucidates the association between environmental factors and human cancer development**
Jiri Zavadil (Int'l Agency Res. Cancer, WHO)

**S14-3** **Understanding a mechanism of an onset of colorectal cancer by colibactin and its cancer prevention**
Kenji Watanabe (Dept. Pharm. Sci., Univ. Shizuoka)
**コリバクチンと大腸がんの関係、予防対策**
渡辺 賢二（静岡県立大・薬）

**S14-4** **The role of primary cilia in cell growth, differentiation and tumorigenesis**
Masaki Inagaki[1], Kousuke Kasahara[1], Daishi Yamakawa[1], Chise Matsuda[2], Masatoshi Watanabe[2] ([1]Dept. Physiol., Mie Univ. Grad. Sch. Med., [2]Dept. Oncol. Path., Mie Univ. Grad. Sch.)
**一次線毛と細胞増殖・分化・がん化**
稲垣 昌樹[1]、笠原 広介[1]、山川 大史[1]、松田 知世[2]、渡邉 昌俊[2]（[1]三重大・院医・分子生理、[2]三重大・院医・腫瘍病理）

**S14-5** **Cancer chemoprevention by antioxidant luteolin**
Aya Naiki-Ito[1], Hiroyuki Kato[1], Taku Naiki[1,2], Satoru Takahashi[1] ([1]Dept. Exp. Path. Tumor Biol., Nagoya City Univ., [2]Dept. Nephro-Urol., Nagoya City Univ.)
**抗酸化物質ルテオリンを用いたがん予防**
内木 綾[1]、加藤 寛之[1]、内木 拓[1,2]、高橋 智[1]（[1]名市大・院医・実験病態病理、[2]名市大・院医・腎・泌尿器）

**S14-6** **Over-activation of hepatocyte p53 promotes progenitor cell-derived liver cancer, which is prevented by acyclic retinoid.**
Yuki Makino, Hayato Hikita, Takahiro Kodama, Ryotaro Sakamori, Tomohide Tatsumi, Tetsuo Takehara (Osaka Univ. Dept. Gastroenterology & Hepatology.)
**肝細胞の p53 活性化による肝前駆細胞由来肝発癌と非環式レチノイドによる発癌抑制**
牧野 祐紀、疋田 隼人、小玉 尚宏、阪森 亮太郎、巽 智秀、竹原 徹郎（大阪大・消化器内科）

**S14-7** **Whole-genome characterization of adult T-cell leukemia/lymphoma.**

Yasunori Kogure[1], Takuro Kameda[2], Junji Koya[1], Kisato Nosaka[3], Yoshitaka Imaizumi[4], Yuki Saito[1,5], Marni B. McClure[1], Mariko Tabata[1,6], Akifumi Takaori-Kondo[7], Yasushi Miyazaki[4], Masao Matsuoka[3], Kenji Ishitsuka[8], Seishi Ogawa[9], Kazuya Shimoda[2], Keisuke Kataoka[1] ([1]Div. Molecul. Oncol., Natl. Cancer Ctr. Res. Inst., [2]Dept. Gastroenterology & Hematology, Univ. Miyazaki, [3]Dept. Hematology, Kumamoto Univ. Hosp., [4]Dept. Hematology, Nagasaki Univ. Hosp., [5]Dept. Gastro., Keio Univ. Sch. of Med., [6]Dept. Uro., Grad. Sch. Med., Univ. Tokyo, [7]Dept. Hematology & Oncology, Grad. Sch. Med., Kyoto Univ., [8]Dept. Hematology & Rheumatology, Kagoshima Univ. Hosp., [9]Dept. Path. & Tumor Biol., Kyoto Univ.)

**ATL の全ゲノム解析**

木暮 泰寛[1]、亀田 拓郎[2]、古屋 淳史[1]、野坂 生郷[3]、今泉 芳孝[4]、斎藤 優樹[1,5]、Marni B. McClure[1]、田畑 真梨子[1,6]、高折 晃史[7]、宮崎 泰司[4]、松岡 雅雄[3]、石塚 賢治[8]、小川 誠司[9]、下田 和哉[2]、片岡 圭亮[1] ([1]国立がん研究セ・研・分子腫瘍、[2]宮崎大・医・消化器血液学、[3]熊本大・病院・血液内科、[4]長崎大・病院・血液内科、[5]慶應大・医・消化器内科、[6]東京大・医・泌尿器、[7]京都大・医・附属病院・血液・腫瘍内科、[8]鹿児島大・病院・血液・膠原病内科、[9]京都大・腫瘍生物学)

**S14-8** **GP2 variants are associated with pancreatic cancer risk: from GWAS association to function**

Yingsong Lin[1], Masahiro Nakatochi[2], Yasuyuki Hosono[3], Hidemi Ito[3], Yoichiro Kamatani[4], Issei Imoto[3], Motoki Iwasaki[5], Takashi Kadowaki[6], Hideshi Ishii[7], Kenji Wakai[2], Teruhiko Yoshida[8], Fumihiko Matsuda[9], Michiaki Kubo[10], Shogo Kikuchi[1], Keitaro Matsuo[3] ([1]Dept. Publ Health Aichi Med. Univ., [2]Nagoya Univ. Grad. Sch. Med., [3]Aichi Cancer Ctr. Res. Inst., [4]Grad. Sch. of Frontier Sci. The Univ. of Tokyo, [5]Div. Epi Cent Publ Heal Sci. Natl. Cancer Ctr., [6]Dept. Diabetes Metabolic Dis The Univ. of Tokyo, [7]Dept. Med. Data Sci. Osaka Univ., [8]Genetic Div. Natl. Cancer Ctr. Res. Inst., [9]Ctr. for Genomic Med. Kyoto Univ., [10]Riken Ctr. Integrative Med. Sci.)

**GWAS による膵がん新規感受性遺伝子 GP2 の同定と機能解析**

林 櫻松[1]、中枡 昌弘[2]、細野 祥之[3]、伊藤 秀美[3]、鎌谷 洋一郎[4]、井本 逸勢[3]、岩崎 基[5]、門脇 孝[6]、石井 秀始[7]、若井 建志[2]、吉田 輝彦[8]、松田 文彦[9]、久保 充明[10]、菊地 正悟[1]、松尾 恵太郎[3] ([1]愛知医大・医・公衆衛生学、[2]名古屋大・院医、[3]愛知県がんセ・研、[4]東京大・院・新領域・創成科学研究科、[5]国立がん研究セ・社健セ・疫学、[6]東京大・院・糖尿病・代謝内科、[7]大阪大・癌創薬プロファイリング学、[8]国立がん研究セ・遺伝子診療部部門、[9]京都大・院医・ゲノム医学セ、[10]理研・生命医科学研究セ)

**S14-9** **Obesity in the control of cancer; countermeasures against East Asian non-obese type lifestyle-related disease**

Dai Nakae (Dept. Nutr. Sci. Food Safety, Facul. AppliedBiosci., Tokyo Univ. Agricul.)

**がんの制御における肥満の意義；東アジア型「非」肥満型生活習慣病への対策**

中江 大（東京農大・応生・食品安全健康学科）

Room 9 Oct. 2 (Fri.) 13:00-15:30 J

## SST4 New Insights into colorectal cancer tumorigenesis and clinical practice
大腸がんの診断・治療と発がん研究における新しい知見

Chairpersons: Takao Hinoi (Dept. Clin. & Mol. Genetics, Hiroshima Univ. Hosp.)
Shinji Tanaka (Endoscopy & Med., Grad. Sch. of Biomed. & Health Sci., Hiroshima Univ.)

座長：檜井 孝夫（広島大・病院・遺伝子診療科）
田中 信治（広島大・院医・内視鏡医学）

Colorectal cancer (CRC) is the one of the most commonly diagnosed cancer throughout the world. The impact that molecular biology and next generation sequencing has had on elucidating the genetic basis of tumorigenesis is best illustrated by the paradigm of colorectal cancer. Thus, unique features of CRC biology have served to accelerate the discovery process. The development of precursor lesions, such as adenomatous polyp, serrated lesion and ulcerative colitis, have made it possible to construct models of the sequential genetic events in cancer initiation and progression. Tumorigenesis of hypermutated CRC modified by microsatellite instability and mismatch repair deficiency is accurate biomarkers to predict response to immune checkpoint inhibition. Recent large-cohort multi-omics data with metagenomic/metabolomics analysis revealed that shifts in the human gut microbiome and metabolome is linked to the development of CRC. In this symposium, we have six distinguished researchers with the cutting-edge research projects for better understandings and new insights into CRC tumorigenesis and clinical practice. We hope that audience can share the latest information.

**SST4-1** **Multi omics analyses of the adenoma carcinoma sequence of colorectal cancer**
Tamotsu Sugai[1], Mitsumasa Osakabe[1], Ryo Sugimoto[1], Hiromu Suzuki[2] ([1]Dept. Mol. Diagnostic Path. Sch. of Medicie IwateMed. Univ., [2]Dept. Mol. Biol. Sch. of Med. Sapporo Med. Univ.)
**Adenoma carcinoma sequence に基づいた大腸癌のマルチオミックス解析**
菅井 有[1]、刑部 光正[1]、杉本 亮[1]、鈴木 拓[2]（[1]岩手医大・医・病理診断学講座、[2]札幌医大・医・分子生物学講座）

**SST4-2** **Metagenomics and metabolomics of feces focused on stage-specific gut microbiota in colorectal cancer**
Hiroyuki Takamaru[1], Satoshi Shiba[2], Shinichi Yachida[3], Yutaka Saito[1] ([1]Endoscopy Div., Natl. Cancer Ctr. Hosp., [2]Div. Cancer Genomics, Natl. Cancer Ctr. Res. Inst., [3]Dept. Cancer Genome Informatics, Osaka Univ., Grad. Sch. Med.)
**便メタゲノムおよびメタボローム解析による大腸多段階発癌における腸内環境の特徴**
高丸 博之[1]、柴 知史[2]、谷内田 真一[3]、斎藤 豊[1]（[1]国立がん研究セ・中央病院・内視鏡科、[2]国立がん研究セ・研・がんゲノミクス、[3]大阪大・医・ゲノム生物・がんゲノム情報学）

**SST4-3** **Molecular characteristics and experimental models of colorectal cancer**
Naoya Sakamoto[1,2], Wataru Yasui[1] ([1]Dept. Mol. Path., Grad. Sch. BIoMed. Sci., HIroshima Univ., [2]Div. Pathol., Exp. Oncol. Res. Clin. Trial., Nat. Can. Cent)
**大腸癌の分子学的特徴と実験モデル**
坂本 直也[1,2]、安井 弥[1]（[1]広島大・院・分子病理学、[2]国立がん研セ・先端医療開発セ・発・臨床病理）

**SST4-4** **Wnt5a signaling and Colitis-associated tumor formation**
Akira Kikuchi (Dept. Mol. Biol. Biochemi., Grad. Sch. Med., Osaka Univ.)
**炎症を伴った大腸がんにおける Wnt5a シグナルの役割**
菊池 章（大阪大・医・分子病態生化学）

**SST4-5** **Multi-gene panel testing using NGS for Lynch syndrome and MSI-H cancer**
Kiwamu Akagi, Gou Yamamoto (Dept. Mol. Diagnosis & Cancer Prevention)
**遺伝子パネル検査時代の MSI 大腸癌とリンチ症候群**
赤木 究、山本 剛（埼玉県がんセ・腫瘍診断・予防科）

**SST4-6** **Analysis of clonal expansion in epithelium affected by ulcerative colitis reveals novel cancer vulnerability**
Nobuyuki Kakiuchi[1,2], Motoi Uchino[3], Takako Kihara[4], Kotaro Akaki[5], Yoshikage Inoue[1], Akira Yokoyama[6], Tomonori Hirano[1,2], Seiichi Hirota[4], Hiroki Ikeuchi[3], Osamu Takeuchi[5], Satoru Miyano[7], Hiroshi Seno[2], Seishi Ogawa[1] ([1]Dept. Pathol. &Tumor Biol., Kyoto Univ., [2]Dept. Gastroenterol. &Hepatol., Kyoto Univ., [3]Dept. IBD, Div. Surg., Hyogo Col. of Med., [4]Dept. Surg. Pathol., Hyogo Col. of Med., [5]Dept. Med. Chem., Kyoto Univ., [6]Dept. Clin. Oncol., Kyoto Univ., [7]Human Genome Ctr., The Univ. of Tokyo)
**潰瘍性大腸炎における大腸上皮クローン進化から明らかとなった大腸がんの脆弱性**
垣内 伸之[1,2]、内野 基[3]、木原 多佳子[4]、赤木 宏太朗[5]、井上 善景[1]、横山 顕礼[6]、平野 智紀[1,2]、廣田 誠一[4]、池内 浩基[3]、竹内 理[5]、宮野 悟[7]、妹尾 浩[2]、小川 誠司[1]（[1]京都大・院医・腫瘍生物学、[2]京都大・院医・消化器内科、[3]兵庫医大・炎症性腸疾患外科、[4]兵庫医大・病院病理、[5]京都大・院医・医化学、[6]京都大・院医・臨床腫瘍薬理、[7]東京大・ヒトゲノムセ）