

**Core Symposia (Presentation in English)**

1	Single cell biology of human cancer	Hiroyuki Aburatani Shumpei Ishikawa	The University of Tokyo The University of Tokyo
	Single cell technologies are opening extraordinary opportunities to provide novel insights in cancer biology. To put together pioneering topics with invited experts in the field, we will select speakers for short oral presentation.		
2	Precision Disease Modeling: Organoid-driven Cancer Research	Toshiro Sato Hiroshi Seno	Keio University Kyoto University
	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 scarcity of disease models that can recapitulate various biological aspects of clinical cancers. Organoid technology was initially developed to regenerate tissue-like structures from pluripotent stem cells or tissue stem cells. Recent works demonstrated that organoids could 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, five 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.		

**特別企画 (Presentation in Japanese)**

1	がん予防研究の未来展望（日本がん予防学会とのジョイントシンポジウム）	豊國 伸哉 戸塚 ゆ加里	名古屋大学 日本大学薬学部/ 国立がん研究センター研究所
	本シンポジウムは、日本癌学会と日本がん予防学会のジョイントシンポジウムであり、がん予防研究の今後を展望するものです。がんは1981年以来、日本において死因の第1位であり、減る傾向は一向に見られません。がん治療には精密医療が次第に実践されてきています。ここで一度、がん予防研究の方向性をよく考えて見る必要があるかと思えます。そこで、日本におけるがんの現状の把握、NGSによる前癌病変の解析、がん予防の臨床実践の現状、体細胞のゲノム変異データから考えるがんの原因など、多彩なテーマを取り上げています。関連の深い分野からのオリジナルな仕事を少数公募します。		

**Symposia (Presentation in English except No. 15)**

1	Forefront research on chromatin dynamics and its application to cancer medicine	Hiroyuki Seimiya Makoto Nakanishi	Japanese Foundation For Cancer Research The University of Tokyo
	We are pleased to announce the symposium focusing on forefront research on chromatin dynamics and its application to cancer medicine. In this symposium, we will discuss cutting-edge topics, such as fine molecular mechanisms for physiological and pathological regulation of chromatin dynamics, cancer vulnerability elicited by aberrant chromatin dynamics, and promising molecular targets for innovative drug development. We wish to bring together diverse fields of researchers, including basic, applied and clinical scientists both from academia and industry. In addition to invited talks, we would like to pick up several excellent studies from proffered abstracts.		
2	Metastasis: Development of novel strategies through multifaceted understanding	Kyoko Hida Daizo Koinuma	Hokkaido University The University of Tokyo
	Metastasis is one of the major issues to be overcome in cancer therapy. Tumor metastasis is regulated by not only tumor cell malignancy also by other microenvironmental factors, such as stromal cells and extracellular matrix. In this symposium, we will discuss the complex metastasis mechanism, and the possibility to develop a novel therapeutic strategy for cancer metastasis.		
3	Development of Cancer Immunotherapy for Precision Medicine	Hiroyoshi Nishikawa Kazuma Kiyotani	National Cancer Center Japanese Foundation For Cancer Research
	In this symposium, we would like to discuss the future development of cancer immunotherapy from the viewpoint of integration of immune and genome analyses.		

4	Evolving molecular targeted therapy	Seiji Yano Ryohei Katayama	Kanazawa University Japanese Foundation for Cancer Research
Molecular-targeted therapies for cancer are evolving rapidly. Various targeted drugs have been approved for various types of solid tumors, including lung cancer. In addition, antibody drug conjugates and tumor blood vessels-targeting drugs are also being rapidly developed. In this session, we will discuss cutting-edge of molecular targeted therapy. We will call for abstracts regarding novel and innovative targeted therapies.			
5	Aging with and without cancer	Eiji Hara Hozumi Motohashi	Osaka University Tohoku University
We invite young researchers to present their innovative research on cancer and aging.			
6	Cancer Metabolism: Beyond the Warburg	Atsushi Hirao Tomoyoshi Soga	Kanazawa University Keio University
Cancer cells adapt metabolism to allow energy production and the redistribution of carbons to nucleotide, protein, and fatty acid syntheses, supporting malignant phenotypes. In addition, recent studies have revealed that some metabolites, such as oncometabolite 2HG, play critical roles as signaling molecules controlling a wide range of cellular processes. Lactate, an end product of glucose metabolism, is utilized in histone lysine lactylation, to regulate gene expression, indicating that metabolites directly control cell fate. Metabolites also act on the immune system and the microbiome, which affect communication among tissues. Thus, metabolism or metabolites play pleiotropic roles in development and malignant progression of cancers. In this symposium, we focus on recent progress of cancer metabolism.			
7	Futuristic methods for precision cancer medicine	Hiroshi Nishihara Issei Imoto	Keio University Aichi Cancer Center Hospital
Development of new technology for cancer genomics will promote precision cancer medicine. In this symposium, we will discuss about possible methods which will be clinically implemented in near future, such as liquid biopsy, exome sequence and microRNA technique.			
8	Understanding and targeting genetically-complex human malignancies	Masaki Mori Fumihiko Ishikawa	Kyushu University RIKEN
Despite great achievements and discoveries in cancer research, we still face intractable cases in which treatment-resistant malignant clones lead to refractory disease. We are organizing a session entitled "Overcoming treatment-resistance and genetic/biological heterogeneity", to introduce cutting-edge science aiming to create effective treatments for poor prognosis malignant diseases. Topics suitable for the symposium include: Insights into genomic complexity and diversity of tumors using sequencing technologies; malignant stem cell biology; and multi-omics approaches connecting genetic, epigenetic and metabolic states of tumor cells. Studies dissecting specific characteristics of various tumors and shared features across diverse tumor types are both essential for a new era of cancer research and we hope to include speakers with expertise in a variety of specialties for this session. We look forward to your abstracts as oral presentations for the session.			
9	Phenotypic heterogeneity and plasticity in cancer regulated by epigenetic mechanisms	Issay Kitabayashi Mitsuyoshi Nakao	National Cancer Center Research Institute Kumamoto University
Epigenome, which is marked with chemical modifications derived from various metabolites, controls gene activity and changes phenotype. Phenotypic heterogeneity in cancer cells contribute to progression, drug resistance and the resultant relapse, through genetic and epigenetic alterations. However, such plasticity highly depends on epigenome formed by environmental insults. In this symposium, we will discuss the phenotypic changes in cancer induced by epigenome and its biological significance.			
10	Evolution of Pathology: From morphological diagnosis towards a universal research platform	Yae Kanai Kengo Takeuchi	Keio University Japanese Foundation for Cancer Research
In the age of genome and AI, Pathology is not limited within morphological diagnosis using microscopy, but would accept the latest technology and will give a universal platform to various fields of cancer research. We have organized this symposium to present such new possibilities in pathology. If you accept the offer, we will tell you the subjects that the chairs expect.			

	Genomic analysis Toward Future Clinical Application	Johji Inazawa Katsutoshi Oda	Tokyo Medical and Dental University The University of Tokyo
11	A major goal of cancer omics is to identify critical genes and pathways that are dysregulated in cancer, and further, to apply this knowledge to the detection, treatment and prevention of cancer. The success of cancer omics will lead to further development of 'Precision Cancer Medicine'. In this symposium, cutting-edge topics of multi-omic analysis will be presented from researchers who are significantly contributing to cancer genomic medicine. As many young researchers and doctors are currently interested in cancer genomic medicine, researchers with outstanding multi-omic data will be welcome as a symposiast who can encourage them to start and continue genomic analysis in cancer for future clinical application.		
	Microbiota and cancer	Kenya Honda Naoko Ohtani	Keio University Osaka City University
12	The gut microbiota is known to play substantial roles in the development and therapeutic outcomes of cancers. In this session, we will discuss recent advances in our understanding of the effects of individual microbiota members and their metabolites on cancer development and treatment response and the mechanisms behind these effects. We will also discuss how we can translate the preclinical research findings into the clinic. We encourage the application and participation of young/female researchers.		
	Cutting-edge animal models for cancer research	Yasuhiro Yamada Masato Kanemaki	The University of Tokyo National Institute of Genetics
13	Animal 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. This symposium aims to introduce a wider range of model organisms for cancer research and to discuss future challenges with cutting-edge animal models.		
	Elucidating how chromosomal instability arises to identify cancer	Kozo Tanaka Ryu-Suke Nozaw	Tohoku University Japanese Foundation For Cancer Research
14	Chromosomal instability (CIN), a condition in which chromosome missegregation occurs at a high rate, is a common feature of cancer that gives rise to aneuploid cells. Although aneuploidy is generally disadvantageous to cellular fitness, genomic heterogeneity caused by CIN supposedly facilitates the clonal selection of cells that acquire growth advantage. It is also known that CIN is related to cancer progression and drug resistance. Importantly, recent works suggest that CIN and aneuploidy can be a target for cancer therapy as an Achilles' heel of cancer. In this symposium, we will discuss causes of CIN and strategies targeting them to specifically eradicate cancer cells.		
	Issues and future directions of academia-pharma collaborations for novel drug development	Naoya Fujita Noriko Gotoh	Japanese Foundation for Cancer Research Kanazawa University
15	In Japan, we are still facing the bottlenecks of academia-industry translation of novel scientific discovery to innovative drug development. This is mainly due to the lack of knowledge on the academia side about drug development strategies and the lack of understanding on the industry side about the novelty of the scientific discoveries. Many government and private grants now support the translation, so we hope to discuss the current issues and future directions of translational research in Japan for a new paradigm of anti-cancer drug development.  <b>* In this session, presentations are given in Japanese. Abstracts and slides should be prepared in English.</b>		
	Big data in cancer research	Seiya Imoto Hiroaki Miyata	The University of Tokyo Keio University
	Novel functions and clinical application of the most famous tumor suppressor gene p53	Rieko Ohki Tomoaki Tanaka	National Cancer Center Research Institute Chiba University
17	The tumor suppressor gene p53 is the most frequently mutated gene in human cancers and plays a central role in the regulation of tumorigenesis. p53 is a transcription factor involved in the regulation of apoptosis, cell cycle arrest, DNA repair, etc., via its ability to transactivate a network of target genes. Utmost efforts have been made by the researchers to uncover the functions of p53 since it was discovered in 1979, but the whole picture of p53 function has not yet been elucidated. In this special workshop, we particularly will focus on the novel discoveries and clinical applications in the p53 research.		

18	Latest evidence and perspective on liquid biopsy	Takayuki Yoshino Koji Ueda	National Cancer Center Hospital East Japanese Foundation for Cancer
	Hope interactive discussion in terms of pre-clinical advance and clinical utility for cancer patients.		
19	New horizons in tumor microenvironment regulation targeting inflammation and angiogenesis	Tetsuro Watabe Masanobu Oshima	Tokyo Medical and Dental University Kanazawa University
	<p>The tumor microenvironment (TME) consists of various components, including tumor cells, tumor stromal cells including stromal fibroblasts, endothelial cells and immune cells like macrophages and lymphocytes and the non-cellular components of extracellular matrix.</p> <p>These components interact with each other via various cytokines, which often induce tumor progression. Thus, a greater understanding of TME networks is crucial for the development of novel cancer therapies. At this symposium, we will introduce recent progress in the field of tumor angiogenesis and inflammation, and discuss the possible therapeutic strategies targeting the TME networks.</p>		
20	Drug discovery and diagnosis enhanced with AI	Satoru Miyano Masahiro Jinzaki	Tokyo Medical and Dental University Keio University
	We welcome the speakers regarding drug discovery enhanced with AI.		
21	Next-generation imaging tools pioneered by light	Shinae Kizaka-Kondoh Mako Kamiya	Tokyo Institute of Technology The University of Tokyo
	<p>Light, which has low tissue permeability and has scattering and absorption properties, has been considered to be applied in a limited way for diagnosis and treatment. However, recent development of tools using light has shown the development of new research that overcomes the weaknesses of light and takes advantage of its advantages of diversity and convenience. In this session, while introducing cutting-edge research using light, we would like you to feel the great potential of light that opens up new paths for next-generation diagnosis and treatment of cancers.</p>		
22	Relationship between clonal hematopoiesis and hematological malignancies/cardiovascular diseases/solid tumors	Toshio Kitamura Atsushi Iwama	The University of Tokyo The University of Tokyo
	<p>Clonal hematopoiesis (CHIP) is an emerging field of research. In particular, the relationship between clonal hematopoiesis and cancer remains elusive. Although any presentation would be acceptable, presentations concerning CHIP and cancer (both clinical and experimental) would be welcome.</p>		

## 臓器別シンポジウム (Presentation in Japanese)

1	<p>消化管がんを対象とする新たな治療開発の方向性</p>	<p>土井 俊彦 石本 崇胤</p>	<p>国立がん研究センター東病院 熊本大学</p>
<p>消化管がんは、国際標準治療をほぼ世界同時に実施可能になり欧米とのガイドラインとの差はほとんどなくなった。近年、NGSによる個別化医療が、消化管領域の悪性腫瘍でも進んでいるが、特異的な分子異常を標的とする薬剤の絶対数が少なくより多くの新治療法の臨床導入が期待される。最近、特異的な遺伝子異常や遺伝子転座を標的とする薬剤開発から、従来は効果がないとされていた細胞膜上の抗原を標的にする抗体医薬品から次世代ADC製剤を含む武装化抗体が注目されている。例えばHER2に対してのトラスツズマブ、デルクステカンは、胃がんでの有効性が示され、大腸がんほかのHER2陽性がんでの開発が進行中である。ADCにおけるバイスタンダー効果は、ヘテロな腫瘍の多い消化管がんでは、相性もよく、RIT,PITなどへも展開されている。ナノテクノロジー技術応用した免疫関連薬剤開発も、限定的ではあるが将来性が期待される。本セッションでは、現在消化管がんで見目、期待されている新しい治療やバイオマーカーなどを提示していただき、現在点での最先端の消化管がんの開発の方向性を共有する。</p>			
2	<p>肝胆膵がんにおける基礎および臨床研究の進展</p>	<p>坂元 亨宇 田中 真二</p>	<p>慶應義塾大学 東京医科歯科大学</p>
<p>肝胆膵がんは難治性で再発が極めて多く、新たな診断法や治療法の開発は喫緊の課題である。肝癌では様々な治療薬の適用が始まったが、そのバイオマーカーは未だに不明であり、さらにウイルス排除 (SVR) 後発癌や、NASH/代謝関連肝癌の増加など新たな課題も生まれている。胆道癌では、ゲノム変異例に対する臨床試験により有望な結果が得られたものの、一部のサブタイプに過ぎず、さらなる研究開発が必須である。膵癌は早期診断が困難であり、典型的なアンメットニーズであることは言うまでもない。肝胆膵がんにおけるゲノム解析技術等の発展によって、臨床材料を用いたcfDNA,マイクロRNA,エクソソーム等を指標とする新規バイオマーカーの探索も活発である。本シンポジウムでは、最新の研究成果によって肝胆膵がんの分子機序の解明から、予防および早期診断、治療開発まで幅広く発表して頂き、明日の癌研究と臨床を目指し活発な議論を行いたい。</p>			
3	<p>肺がんのtranslational 研究の臨床へのインパクト</p>	<p>岡本 勇 光富 徹哉</p>	<p>九州大学 近畿大学</p>
<p>近年の肺癌薬物療法の飛躍的な治療成績改善は、ドライバー遺伝子異常の発見や免疫チェックポイント機構の解明などの基礎研究での成果が礎となっています。また実臨床でみられる課題、問題点を分子レベルで解明し、更なる治療成績向上へ向けた研究も活発に行われています。本シンポジウムでは基礎と臨床を結び最新の研究成果を発表頂き議論して参ります。</p>			
4	<p>乳がん：Late recurrenceの基礎と臨床</p>	<p>上野 貴之 下野 洋平</p>	<p>公益財団法人がん研究会 藤田医科大学</p>
<p>乳がんの大きな特徴として、10年を過ぎても、それまでとほぼ同じ率で再発が起こり続ける、というものがありません。予後が改善され、寿命も伸びている中で、晩期再発は大きな社会問題になりつつあると同時に、科学的にも重要な内容を含んでいると思われます。今後、がんの撲滅のみでなく、がんと共に生きていく (with cancer) という時代の中で、ドーマンシーのダイナミズムを理解するために、がん幹細胞やがん免疫、エピゲノムの動的変化、senescence、がんの代謝とオートファジーなど、晩期再発の持つ意味、科学的な視点を、基礎科学者、臨床家が混ざってがんの本質から議論することにより、少しでもがんの理解に近づければと思います。</p>			
5	<p>AYA世代のがん研究における最新の知見</p>	<p>中村 卓郎 滝田 順子</p>	<p>公益財団法人がん研究会 京都大学</p>
<p>AYA世代のがんの多くは希少がんであり、その生物学的特性・診断・治療のそれぞれにおいて未解決な問題を抱えている。本シンポジウムでは、AYA世代に発症する造血器、神経系、間葉系の腫瘍群を対象とした基礎研究やTR研究に従事されている研究者から、最新の知見を発表して頂く。関連の深い分野におけるユニークでオリジナリティに溢れる研究を公募します。</p>			
6	<p>遺伝性がん</p>	<p>中村 清吾 平沢 晃</p>	<p>昭和大学 岡山大学</p>
<p>近年は遺伝性腫瘍関連遺伝子の遺伝学的検査がコンパニオン診断として採用、2019年にがんゲノム医療の保険収載により、実地がん診療より遺伝性腫瘍家系が同定されるケースが急増しています。また2020年4月からは遺伝性疾患としての遺伝性乳癌卵巣癌症候群が保険病名として採用され、原因遺伝子であるBRCA1またはBRCA2 (BRCA1/2)の遺伝学的検査、サーベイランス、リスク低減手術などの一部が保険収載され、本邦の遺伝性腫瘍家系が急速に同定されてきています。一方で我が国では経済財政運営と改革の基本方針2019 (骨太方針2019:閣議決定)を踏まえ、令和2年度から開始する健康・医療戦略のもと、2019年10月23日の第1回ゲノム医療協議会において、発がんの原因遺伝子特定に向けた全ゲノム解析を行うことが示されました。今後の全ゲノム解析時代を見据えたすべての遺伝性腫瘍症候群関連遺伝子を念頭においた対応が必要となっているなかで、各演者の先生方にはそれぞれの領域での現状と課題ならびに成果を提示して頂きたいと存じます。</p>			