Professor Kazuya Tsuchihara　（所属等に変更なし）

Professor Genichiro Ishii　（所属等に変更なし）

Professor Masahiro Yasunaga　（所属等に変更なし）

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Associate Professor: Akihiko Ohashi, Ph.D. （所属が変更あり、内線番号メールアドレスは変更なし）

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**1) Development of therapeutics and diagnostics by integrated analysis of clinical omics data to cancer therapy (Tsuchihara Laboratory)**

　To develop cancer therapeutics and diagnostics, integration of clinical information and multi-omics analysis data is necessary. We are engaged in research and development of data processing pipelines, database construction, optimization techniques for efficient extraction of relevant information, and visualization.

**順序変更、原稿を前半のみ****にする（大橋研究室が分離独立）**

**図の変更なし。**

**2) Cancer biology based on the microenvironment context (Ishii Laboratory)**

**原稿・図とも変更なし。**

**3) Antibody Drug Delivery Systems (DDS) and Next-Generation Cancer Therapeutics (Yasunaga Laboratory)**

・Development of Next-Generation Antibody Therapeutics: ADC, BsAb, and RIT / T-cell regulation to enhance BsAb-based T cell engagers / Brain delivery to overcome the blood-brain barrier / Innovative antibody DDS using the shark immune system (Fig).

・Translational Applications: Molecular imaging-based visualization of antibody and cell delivery / PK and PD analysis via mass spectrometry, targeting antibodies, drugs, odor, and exhaled breath components.

**原稿、図の変更**

4) **Immunotherapy targeting cancer antigens: Development of cancer vaccines and CAR/TCR-T cell therapy (Nakatsura Laboratory)**

While mRNA vaccines have been a great success in developing COVID-19 vaccines, no cancer vaccines have been approved, and there is currently a global race to develop one.　Clinical development of CAR/TCR-T cells is lagging far behind the United States, China, and Europe. Still, no one has demonstrated efficacy in solid tumors; this is also a global competition. This method has many problems, including its high cost, complexity, and safety concerns, and there are few clinical trials in Japan, so it has not become widespread.

　Our laboratory has selected 10 common cancer antigens that cover a wide range of solid cancers.　We aim to develop a cancer mRNA vaccine that combines these molecules and develop a low-cost, simple, and safe T cell therapy that involves transiently expressing and administering multiple CARs or TCRs that target these molecules in T cells.　Our goal is to provide recurrence prevention and treatment to all cancer patients.

**原稿・図とも新規掲載**

**5) Elucidation of Drug Resistance Mechanisms and Development of Novel Therapeutics by Advanced Omics Technologies (Ohashi Laboratory)**

　Aiming to novel drug discovery based on cancer hallmarks and vulnerabilities, we are conducting basic and translational research programs with advanced-omics approaches: molecular and cellular biology, chemical biology, pharmacology, bioinformatics, and AI technologies. We are also

driving collaboration programs with academia, biotechs, anｄ　pharmaceuticals in Japan and overseas.

**原稿を変更し独立させる・図を新規に追加**

**6) Exploration of the Biological Mechanisms of Cancer and Therapeutic Applications through Data-Driven Approaches (Katoh Laboratory)**

Cancer progresses through highly intricate rules across multiple levels, including tissue architecture, cellular biology, and molecular pathways, from its initiation to progression and therapeutic modulation. Decoding the "code" of cancer demands profound insights into histopathology, combined with cutting-edge, innovative technologies for precise analysis.

In our laboratory, we employ advanced approaches such as spatial genomics, single-cell RNA sequencing, and functional genomics screening using shRNA and CRISPR libraries to gather and analyze vast amounts of data. Through this data-driven strategy, we are not only striving to unravel the molecular mechanisms of cancer but are also pushing the boundaries to identify groundbreaking therapeutic targets and discover novel drug seeds that have yet to be explored.

**原稿・図とも新規掲載**