

Social Cooperation Research Program

Project Division of Innovative Diagnostics Technology Platform

革新的診断技術応用基盤社会連携研究部門

Professor	Hiroshi Yotsuyanagi, M.D., D.M.Sc.	教授	博士(医学)	四柳	宏
Project Associate Professor	Hiroshi Yasui, M.D., D.M.Sc.	特任准教授	博士(医学)	安井	寛
Project Assistant Professor	Muneyoshi Futami, M.D., D.M.Sc.	特任助教	博士(医学)	二見	宗孔

In this laboratory, we aim to create innovative diagnostic technologies by combining various analysis and measurement technologies with ideas and unmet needs from the clinical perspective as hematologists-oncologists. We will provide innovative approaches to intractable diseases and conditions, and study the optimization of diagnosis and treatment.

1. Research and development of novel diagnostics to evaluate immune response

Hiroshi Yotsuyanagi, Hiroshi Yasui¹, Muneyoshi Futami, Kiyosumi Ochi, Asako Kobayashi, Reika Li, Mikiko Suzuki, Keiji Hirano², Yuma Oka², Masatoshi Yanagida², Arinobu Tojo³

¹St. Marianna University School of Medicine

²Central Research Laboratories, Sysmex Corporation

³Tokyo Medical and Dental University

Novel immunodiagnosics to analyze immune function is important for the evaluate the activity of autoimmune diseases as well as development of cancer immunotherapy. We study to develop novel immunodiagnosics to evaluate activities of immune cells in patients with allogenic hematopoietic stem cell transplantation to diagnose severity of graft-versus-host disease. It will be also expected to contribute the development of the novel cancer immunotherapy in hematologic malignancies.

2. Investigator-initiated clinical trials under an Investigational New Drug application for the development of novel cancer therapeutics and biomarkers

Hiroshi Yasui¹, Mikiko Suzuki, Kiyosumi Ochi, Fumitaka Nagamura², Arinobu Tojo³

¹St. Marianna University School of Medicine

²Center for Translational Research, IMSUT Hospital, The Institute of Medical Science, The University of Tokyo

³Tokyo Medical and Dental University

Genome medicine and genome research, including pharmacogenomics and pharmacogenetics, are important for developing novel therapeutic agents for cancer and incurable diseases and identifying biomarkers. Our research aims to develop efficient approaches for conducting investigator-initiated clinical trials under Investigational New Drug (IND) applications to promote translational research and discover biomarkers for prediction of the safety and efficacy of novel therapeutics through omics analyses, including

genomics. We were conducting, supporting, summarizing or preparing three investigator-initiated clinical trials under INDs applications for the development of academic-oriented innovative anticancer drug especially novel cancer immunotherapy.

3. Program for supporting biospecimen analysis for the diagnosis and treatment of hematological malignancies

Hiroshi Yasui¹, Arinobu Tojo², Kaoru Uchimaru³, Toshiki Watanabe¹

¹St. Marianna University School of Medicine

²Tokyo Medical and Dental University

³Department of Computational Biology and Medical Sciences, Graduate School of Frontier Sciences, The University of Tokyo

To support cancer scientists in promoting translational research and genome medicine, we have established a platform for supporting cohort studies and biospecimen analysis. Under this program, we are collecting and managing clinical materials, including tumor cells, serum, and peripheral blood mononuclear cells from patients at high risk of hematologic

malignancies as well as patients with blood cancer. We provide support for obtaining and/or analyzing biomaterials, as requested by researchers, and contribute to their clinical studies and publications.

4. Support and management of translational research

Hiroshi Yasui¹

¹St. Marianna University School of Medicine

To promote translational research and genome medicine, we participate in the “Translational Research Network Program, Japanese Translational Research and Clinical Trials Core Centers” supported by the Japan Agency for Medical Research and Development, as members of the Translational Research Advancement Center of the University of Tokyo. The aim of the program is to promote translational research and investigator-led clinical trials aiming for practical applications of basic studies in academia, managing the assessment of scientific seeds and intellectual property rights, and therefore promoting the development of advanced medical arts, including genome medicine.

Publications

1. Kikuchi J, Kodama N, Takeshita M, Ikeda S, Kobayashi T, Kuroda Y, Uchiyama M, Osada N, Bogen B, Yasui H, Takahashi N, Miwa A, Furukawa Y. EMD originates from hyaluronan-induced homophilic interactions of CD44 variant-expressing MM cells under shear stress *Blood Adv* 2022 Aug 5;bloodadvances.2022007291. doi:10.1182/bloodadvances.2022007291. Online ahead of print.
2. Kaito Y, Hirano M, Futami M, Nojima M, Tamura H, Tojo A, Imai Y. CD155 and CD112 as possible therapeutic targets of FLT3 inhibitors for acute myeloid leukemia. *Oncol Lett*. 2022;23:51.
3. Ikeda M, Futami M, Chanda B, Kobayashi M, Iizawa K, Tojo A. The mouse homolog of the mutant WASp responsible for human X-linked neutropenia renders granulopoiesis ineffective. *Biochem Biophys Res Commun*. 2022;622:177-183.
4. Meshitsuka S, Ninomiya R, Nagamura-Inoue T, Okada T, Futami M, Tojo A. CRISPR/Cas9 and AAV mediated insertion of $\beta 2$ microglobulin-HLA-G fusion gene protects mesenchymal stromal cells from allogeneic rejection and potentiates the use for off-the-shelf cell therapy. *Regen Ther*. 2022;21:442-452.
5. 安井 寛, 小林真之, 今井陽一 解説3. セル・フリーDNAを用いた多発性骨髄腫の早期診断 血液内科 科学評論社 2022年1月; 84(1), 112-117
6. 安井 寛, 山口 類 医用工学ハンドブック～検査・診断・治療・ヘルスケアとQOL～第2編1章1節 医用工学における生命科学ーゲノム 秋吉一成, 佐久間一郎, 津本浩平 編: 株式会社エヌ・ティー・エス, 2022年2月, 12-22