



June 10th, 2020
Repertoire Genesis Inc.

Signed a contracted research and development agreement with AMED to establish basic technology for manufacturing highly functional genome-edited T cells

Repertoire Genesis Inc. (Headquarters: Ibaraki, Osaka, hereinafter "Repertoire Genesis") has signed a contracted R&D agreement with the Japan Agency for Medical Research and Development (hereinafter "AMED") and has started the project through industry-academia-government collaboration that will explore the "Establishment of clinical manufacturing of highly functional NY-ESO-1-specific genome-edited T cells" as designated under AMED's Cyclic Innovation for Clinical Empowerment program (CiCLE).

In October 2019, we launched a new research program named "Next Generation Development of Genome and Cellular Therapy Program" in partnership between Department of Hematology and Oncology in Research Institute for Radiation Biology and Medicine, Hiroshima University and Repertoire Genesis with the aim of developing novel genome-edited T cells (hereinafter "TCR-T") that could become an international standard in the future.

In the production of TCR-T, the interference between the endogenous T cell receptor (TCR) and the newly introduced cancer antigen-specific TCR would be a problem. Therefore, in this research program, we are developing a technology for avoiding interference by de-functionalizing endogenous TCR genes before introducing a cancer antigen-specific TCR expression vector by using the genome editing technology known as "Platinum TALEN" *1. (Ichinohe T, Yamamoto T, Sakuma T, Suzuki R, et al. WO/2019/073964).

With the support of AMED, we will continue to apply this technology to develop TCR-T targeting the NY-ESO-1 antigen*2 that is expressed in many solid tumors and some blood cancers. To establish techniques for clinical manufacturing of highly functional genome-edited T cells, Repertoire Genesis will focus on this research to evolve innovative cellular immunotherapy in collaboration with Professor Tatsuo Ichinohe, Department of Hematology and Oncology in Research Institute for Radiation Biology and Medicine, Hiroshima University, Professor Takashi Yamamoto and Associate Professor Tetsushi Sakuma, Graduate School of Integrated Sciences for Life, Hiroshima University and Biomedica Solution Co., Ltd.



Repertoire Genesis will continue to contribute to the society by elucidating the mechanisms of diseases and accelerating the development of novel diagnostic and treatment methods by collaborating closely with academia-industry-government.

***1 Platinum TALEN**

A genome editing tool developed by Professor Takashi Yamamoto of Hiroshima University and has the characteristic of high cleavage activity of the target genome sequence by optimizing the amino acid sequence of TALE protein.

***2 NY-ESO-1**

A well-characterized immunogenic cancer-testis antigen known to be expressed in a wide range of malignant tumors (esophageal cancer, ovarian cancer, breast cancer, malignant melanoma, hematological cancer, etc.). NY-ESO-1 has strong immunogenicity and is a target candidate molecule for cancer vaccines and immunotherapy.

About Repertoire Genesis

Repertoire Genesis Inc. is a Japanese biotechnology company dedicated to developing novel immune related treatment and diagnostics based on its corporate mission of “curing the incurable”. We take an approach to analyze the immune system in detail based on our unique immune diversity analysis technology such as TCR/BCR repertoire analysis and neoepitope analysis. Since our establishment in October 2014, we continue to challenge to provide effective treatments and diagnostics for unresolved medical problems specifically focusing on cancer, autoimmune and infectious diseases.

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