News Release

Joint Research Results on Regulatory T cells between Osaka University Immunology Frontier Research Center and Chugai Published in Nature

- Joint research results with IFReC Experimental Immunology at Osaka University Immunology Frontier Research Center (IFReC) published in the online edition of the science journal Nature
- First elucidation of the regulatory network of the master transcription factor FoxP3 in human induced regulatory T cells
- This research result also presents the possibility of a new approach to autoimmune disease treatment

TOKYO, March 28, 2025 -- Chugai Pharmaceutical Co., Ltd. (TOKYO: 4519) announced that research results conducted under a comprehensive collaboration agreement with Osaka University Immunology Frontier Research Center (IFReC) have been published in the online edition of the science journal Nature in collaboration with IFReC Experimental Immunology (Specially Appointed Professor Shimon Sakaguchi). Nature is one of the world's most prestigious science journals published by Springer Nature, covering the latest important research findings in a wide range of fields from general natural sciences to medicine, environmental science, and space science.

“Genome-wide CRISPR screen in human T cells reveals regulators of FOXP3”
(https://www.nature.com/articles/s41586-025-08795-5)

“We are very pleased that the joint research results with Osaka University IFReC have been published in Nature. Through this research, the regulatory mechanism of regulatory T cells has been elucidated, and it is expected to be applied to the treatment of various autoimmune diseases,” said Chugai’s President and CEO, Dr. Osamu Okuda. “Collaboration with external parties, including academia, is a form of open innovation, which is one of the Key Drivers of Chugai's growth strategy TOP I 2030 towards 2030 and are extremely important. We will continue to strive to contribute to the development of healthcare and people's health.”

Chugai signed a comprehensive collaboration agreement with Osaka University in 2016 for advanced immunology research activities with IFReC. Aiming to discover and nurture seeds of medical innovation latent in cutting-edge basic immunology, multiple

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joint research projects and feasibility studies are currently ongoing. This research result was born from joint research between IFReC Experimental Immunology, led by Specially Appointed Professor (full-time) Shimon Sakaguchi, a leading expert in regulatory T cell research, and Chugai.

This study is the first to elucidate the regulatory network of FoxP3, a master transcription factor essential for maintaining Treg function, in human induced regulatory T cells (iTreg), and proposes the possibility of new autoimmune disease treatment through Treg regulation. By combining genome-wide CRISPR screening and a novel single-cell resolution, signaling pathways and related factor groups involved in FoxP3 regulation were identified. Furthermore, by knocking out important factors identified from the related factor groups, more functional and stable Treg induction was made possible. This research is expected to promote scientific understanding of Treg biology and apply to new autoimmune disease treatments through Treg regulation.

*Induced regulatory T cells: CD4-positive T cells in which FoxP3 is artificially induced in vitro. Generally distinguished from Tregs that differentiate in vivo.

[Reference]

“Removing the breaks: RBPJ ablation in T cells boosts iTreg differentiation, stability and function”
https://www.ifrec.osaka-u.ac.jp/en/research/20250327-0101.htm

Comprehensive Collaboration Agreement between Osaka University and Chugai ~Total of 10 billion yen contribution over 10 years to IFReC~ (Press release on May 19, 2016)
https://www.chugai-pharm.co.jp/english/news/detail/20160519153000_136.html

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