



## Chugai's Bispecific Antibody "ERY974" Results of Preclinical Study Published in Science Translational Medicine - Chugai's Research Findings Adopted by World-Class Academic Journal -

TOKYO, October 5, 2017 -- [Chugai Pharmaceutical Co., Ltd.](http://www.chugai-pharm.co.jp) (TOKYO: 4519) announced today that the preclinical study findings on its original bispecific antibody ERY974, a molecule that binds Glypican-3 and CD3 simultaneously, and that is currently under development as a Phase I clinical study for solid tumors, were published in the online edition of *Science Translational Medicine* on October 4, 2017 (local time) (<http://stm.sciencemag.org/content/9/410/eaal4291>).

*Science Translational Medicine* is a member of the *Science Magazine* family of journals and is an essential platform for peer-reviewed, multidisciplinary research driving the latest medical advances.

“ERY974 is a bispecific antibody created under the joint research between Chugai and Chugai Pharmabody Research with the application of Chugai’s proprietary innovative antibody engineering technologies. We are extremely pleased that our research findings on ERY974 have been published in *Science Translational Medicine*,” said Dr. Hisafumi Okabe, Senior Vice President responsible for Research and Translational Clinical Research. “It is said that cancer immunotherapy has made a paradigm shift in cancer treatment and that the role of the immune system in cancer treatment is likely to continue to grow in the future. As a cancer immunotherapy, we have high hopes that ERY974 will demonstrate anti-tumor effects in future clinical studies and become a drug that can contribute to the treatment of patients.”

Glypican-3 (GPC3) is a membrane protein that is expressed with high frequency on the cellular membranes of various tumor cells including hepatocellular carcinoma, lung cancer, and gastric cancer. GPC3 is reported to be expressed in various tissues in the fetal stage and play an important role\*, but is rarely expressed in normal adult tissues\*. As GPC3 expression is observed through the malignant transformation of cells, GPC3 is thought to be a protein specific to cancer (tumor-associated antigen)\*.

ERY974 is a bispecific antibody that binds to both GPC3 on the cancer cell membrane and to CD3, a membrane protein expressed on T cells, a type of lymphocyte. ERY974 is a T cell Redirecting AntiBody (TRAB) created with Chugai’s proprietary antibody engineering technology, and while simultaneously binding to GPC3 and CD3 and directing T cells to cancer cells, it also activates T cells, specifically attacking and killing neighboring cancer cells. Based on this mechanism whereby it activates T cells and attacks cancer cells, TRAB is classified as a type of cancer immunotherapy.

The following points were shown in this research:

- According to the immunohistochemistry, GPC3 is expressed in various cancers (a hepatocellular carcinoma, a squamous lung cancer, a small cell lung cancer, an esophageal cancer, a gastric cancer and a head and neck cancer), and as previously reported \*, it is rarely expressed in normal tissues (30 different tissues) (*in vitro*)
- GPC3-dependent T cell activation and killing of cancer cells by ERY974 was observed *in vitro*
- In three different experimental tumor models using mouse, ERY974 demonstrated anti-tumor effects
- Anti-tumor effects were observed even in cancers where other cancer immunotherapies are ineffective (Mouse)
- Tolerability of ERY974 was observed in toxicity testing in animal

Based on the results of this preclinical study, Chugai began phase I clinical trial of ERY974 in patients with GPC3 positive solid tumors in the United States in August 2016 (NCT02748837).

As a leading company in the field of antibody therapeutics, Chugai will continue to contribute to global healthcare and the health of all people through the creation of innovative treatments using its proprietary antibody technologies.

\* D. Baumhoer, L. Tornillo, S. Stadlmann, M. Roncalli, E. K. Diamantis, L. M. Terracciano, Glypican 3 expression in human nonneoplastic, preneoplastic, and neoplastic tissues: a tissue microarray analysis of 4,387 tissue samples. *Am J Clin Pathol.* **129**, 899-906 (2008).

### **About Chugai**

Chugai Pharmaceutical is one of Japan's leading research-based pharmaceutical companies with strengths in biotechnology products. Chugai, based in Tokyo, specializes in prescription pharmaceuticals and is listed on the 1st section of the Tokyo Stock Exchange. As an important member of the Roche Group, Chugai is actively involved in R&D activities in Japan and abroad. Specifically, Chugai is working to develop innovative products which may satisfy the unmet medical needs, mainly focusing on the oncology area.

In Japan, Chugai's research facilities in Gotemba and Kamakura are collaborating to develop new pharmaceuticals and laboratories in Ukima are conducting research for technology development for industrial production. Overseas, [Chugai Pharmabody Research](#) based in Singapore is engaged in research focusing on the generation of novel antibody drugs by utilizing Chugai's proprietary innovative antibody engineering technologies. [Chugai Pharma USA](#) and [Chugai Pharma Europe](#) are engaged in clinical development activities in the United States and Europe.

The consolidated revenue in 2016 of Chugai totalled 491.8 billion yen and the operating income was 80.6 billion yen (IFRS Core basis).

Additional information is available on the internet at <https://www.chugai-pharm.co.jp/english>.

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