

December 13, 2017

Mitsubishi Tanabe Pharma Corporation
Order made Medical Research Corporation
Trans Chromosomics Corporation

Strategic Collaboration for the Development of the Antibody Drug to Treat Neurodegenerative Diseases including ALS

Mitsubishi Tanabe Pharma Corporation (Head Office: Osaka; President & Representative Director: Masayuki Mitsuka, "MTPC"), Order made Medical Research Corporation (Head Office: Kashiwa, Chiba; President & Representative Director: Yasufumi Murakami, "OMR") and Trans Chromosomics Inc. (Head Office: Yonago, Tottori; President & CEO: Mitsuo Oshimura, "TC") announced that we have entered into a strategic collaboration for the development of an antibody drug to treat neurodegenerative diseases, such as amyotrophic lateral sclerosis (「ALS」) in November, 2017.

OMR has established the innovative immunization method for membrane protein antibody production 「LIMAXYS^{*1}」, and is focusing to research antibody drugs against target molecules that previous technology could not approach. TC has developed animals producing a fully human antibody created with its own mammalian artificial chromosomes and has established cell-based assay systems to find new targets for treating neurodegenerative diseases. MTPC has pharmaceutical products edaravone (product name in Japan; Radicut; product name in US: Radicava) was approved for an indication of ALS not only in Japan June, 2015, but also in the U.S. in May, 2017. According to a report^{*2}, global ALS patients will increase over the next 25 years, therefore MTPC promotes research and development of new therapeutic drugs against ALS and neurodegenerative diseases.

This collaborative research program is based on the target molecule related with the progression of ALS that OMR and TC have discovered together. OMR and TC will work collaboratively to obtain fully human antibody candidates against the target molecule and MTPC will be responsible for the pre-clinical research to evaluate them.

We will continue working to contribute to patients' health by developing innovative drugs that address unmet medical needs with next-generation antibody drug technology.

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<Reference>

About LIMAXYS^{*1}

Most of membrane proteins have small extracellular domain and contains many hydrophobic amino acids. As preparation of antigen is very difficult in such membrane proteins, the numbers of the suitable target for therapeutic antibodies are limited (20 targets out of 5600 membrane proteins). Antibody generation was possible only for the targets which have large external cellular domain. OMR Inc. has successfully developed a novel immunization method (LIMAXYS method) using highly metastatic tumor cell line for immunization. Efficient immune response is induced in the process of metastasis of the cell line which is expressing target molecules in cellular membrane after implantation into mouse. By the use of this method, generation of antibodies against all kinds of membrane proteins has been enabled. The patents of the LIMXYS method have been issued in US and Japan.

According to a report^{*2}

Nat Commun. 2016;7:12408

About Mitsubishi Tanabe Pharma Corporation

Mitsubishi Tanabe Pharma, which was founded in 1678, has its headquarters in Doshomachi, Osaka, which is the birthplace of Japan's pharmaceutical industry. With business centered on ethical pharmaceuticals, Mitsubishi Tanabe Pharma is a well-established company and has the longest history of any listed company in Japan.^[1] In accordance with the corporate philosophy of "contributing to the healthier lives of people around the world through the creation of pharmaceuticals," the Company formulated the key concept of Open Up the Future under the Medium-Term Management Plan 2016-2020. Through the discovery of drugs that

address unmet medical needs, centered on its priority disease areas — autoimmune diseases, diabetes and kidney diseases, central nervous system diseases, and vaccines — Mitsubishi Tanabe Pharma will strive to contribute to the health of patients around the world. MTPC is the parent company of MTPA and the license holder of RADICAVA.

<http://www.mt-pharma.co.jp/>.

About Order-made Medical Research Inc.

Order-made Medical Research Inc., a biotech company focusing onto research and development of therapeutic antibody, was founded in 2012. Antibody generation was possible only for the target which have large external cellular domain because of the difficulty of preparation of antigen in membrane proteins. By successful development of the LIMAXYS method, OMR is now able to produce antibodies against all of membrane proteins. OMR is also pursuing the breakthrough in the field of therapeutic nucleic acid. OMR's goal is to provide remarkable biologics for unmet medical needs and to contribute to the health of all human being.

About Trans Chromosomics Inc.

TC Inc. was established in Yonago, Tottori prefecture in 2014 as a venture from University of Tottori University utilizing the world's most leveraging cutting edge chromosome engineering technology. A novel artificial chromosome (NAC) composed of a centromere and a telomere of a natural chromosome is capable of carrying a huge genome of several mega-bases or more, and is stable as one new chromosome in animal cells. It can be transmitted to descendants by mating of Tc (Trans chromosomic) animals. We contribute to people's living and health by applying innovative chromosome engineering technology mainly on the development of "fully human antibody-producing mouse/rat" and "mouse/rat with genetic rare disease " to medical treatment and drug discovering widely.

<http://trans-chromo.wixsite.com/trans-chromosomicsAbout>
