

## Translation

### Anti-Cancer Agent “Perjeta<sup>®</sup>” Approved for HER2-positive Inoperable or Recurrent Breast Cancer

June 28, 2013 (Tokyo) – Chugai Pharmaceutical Co., Ltd. [Main Office: Chuo-ku, Tokyo. Chairman & CEO: Osamu Nagayama (hereafter, “Chugai”)] announced today that it obtained approval by the Japanese Ministry of Health, Labour and Welfare (MHLW) on June 28, 2013, for “HER2-positive inoperable or recurrent breast cancer,” for the anti-cancer agent / anti-HER2 humanized monoclonal antibody, “Perjeta I.V. Infusion 420mg/14mL” [generic name: pertuzumab (genetical recombination)] (hereafter, Perjeta<sup>®</sup>).

In May 2012, Chugai filed a new drug application for approval for HER2-positive inoperable or recurrent breast cancer with the MHLW based on the results from a Japanese phase I clinical trial and a global phase III clinical trial (The CLEOPATRA trial), which included Japanese patients.

The CLEOPATRA trial, a multinational, phase III, randomised, double-blind, placebo-controlled study, compared the combination of Perjeta<sup>®</sup>, trastuzumab (Herceptin<sup>®</sup>) and docetaxel to placebo, trastuzumab and docetaxel in patients with previously untreated HER2-positive metastatic breast cancer. Patients who received Perjeta<sup>®</sup> in combination with trastuzumab and docetaxel experienced a 38 percent reduction in the risk of their disease worsening or death (progression free survival; PFS) (hazard ratio=0.62; p<0.001). The median PFS improved by 6.1 months from 12.4 months of trastuzumab and docetaxel to 18.5 months of Perjeta<sup>®</sup>, trastuzumab and docetaxel. As for overall survival (OS), the results showed that the risk of death was reduced by 34% for patients who received Perjeta<sup>®</sup> in combination with trastuzumab and docetaxel compared to those who received placebo, trastuzumab and docetaxel (hazard ratio=0.66; p=0.0008). The combination of Perjeta, Herceptin and chemotherapy is the only regimen to have shown a significant improvement in both progression-free and overall survival compared to Herceptin plus chemotherapy in people with previously untreated HER2-positive metastatic breast cancer.

Adverse events were similar to those reported to date with trastuzumab and docetaxel, and there was no marked increase in adverse events by the combination of Perjeta<sup>®</sup>.

The number of patients newly diagnosed with breast cancer in Japan continues to rise each year and is estimated to become, on annual average, approximately 60,000 during 2015-2019\*. And HER2 expression has been observed in approximately 20% of breast cancer patients.

As the top pharmaceutical company in the field of oncology, Chugai is convinced that Perjeta<sup>®</sup> can contribute to the treatment of patients with “HER2-positive inoperable or recurrent breast cancer” by providing a new therapeutic option.

\* T. Sobue, et al., Cancer White Paper 2012, Shinoharashinsha Inc.

### About Perjeta®

Perjeta® is a humanized monoclonal antibody developed by Roche for the treatment of breast cancer that targets HER2 as in a complementary way to trastuzumab. In HER2-positive breast cancer patients, HER2 exists in large amount on the surface of cancer cells and sends out proliferation signals to cells.

Perjeta® is believed to work in a way that is complementary to Herceptin, as the two medicines target different regions on the HER2 receptor. PERJETA is a first-in-class HER2 Dimerisation Inhibitor (HDI) monoclonal antibody. The combination of Perjeta® and trastuzumab together provide a more comprehensive blockade of HER signalling pathways than either agent alone. Perjeta® works by binding to HER2 to prevent HER2 from making pairs with HER3 or other types of HER which also sends proliferation signals when making pairs with HER2. In addition, Perjeta® and/or trastuzumab binding to HER2 draw immune cells (macrophage or NK cells) to attack and kill cancer cells by the activation of antibody dependent cellular cytotoxicity.

Perjeta® was approved for patients with previously untreated, HER2-positive metastatic breast cancer in the US in June 2012 and in Europe in March 2013.

### About efforts for making personalised healthcare targeting HER2

Roche is the leading company in the world working on personalised healthcare medicines from the early period. Trastuzumab is a personalised healthcare medicine realized and developed first in the world by Roche.

There is a type of breast cancer in which a protein called HER2 is overexpressed. Trastuzumab is a drug developed to target HER2, and therefore it is effective for this type of breast cancer. In Japan, HER2 testing has become a common practice, and is performed in about 90% of patients with breast cancer. Perjeta® also targets HER2. HER2 testing is performed before drug administration in order to determine whether or not the drug may be effective. By doing so, one can avoid administering the drug to patients who have breast cancer without HER2 expression, in whom the drug will probably not work.

Chugai filed the new drug application of a compound T-DM1, an antibody-drug conjugate which also targets HER2, in January 2013.

### Mode of action of pertuzumab (simplified diagram)

