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Chugai Introduces First Cryo-electron Microscopy System in Pharmaceutical Industry in Japan

- Chugai introduced a cryo-electron microscopy system for the first time in the Japanese pharmaceutical industry. It aims to increase the probability of success through realizing a more precise molecular design based on structural analysis of drug candidate compounds
- Chugai aims to accelerate drug discovery research in various fields including mid-size molecule drugs, small molecules, and antibodies

TOKYO, May 31, 2021 -- [Chugai Pharmaceutical Co., Ltd.](#) (TOKYO: 4519) announced its introduction of the first cryo-electron microscopy (Cryo-EM) system in the Japanese pharmaceutical industry to further accelerate drug discovery research.

The cryo-EM, for which the Nobel Prize in Chemistry 2017 was awarded, has been drawing attentions as an innovative technology. The system was introduced for the structural analysis of drug candidate molecules bound to target proteins, which is an essential process in drug discovery research.

Chugai places great emphasis on Structure-Based Drug Design in its drug discovery research, and aims to create quality drug candidate compounds by pursuing precise structure design. X-ray crystallographic analysis, which we have primarily used to obtain molecular structure, requires crystallization of the intracellular protein which a drug candidate targets. The mid-size molecule drug which Chugai focuses on mainly targets such proteins that are difficult to crystallize, which has posed a challenge in the refinement of compound design.

As the cryo-EM does not require the crystallization process, it enables structure analysis of a wider range of molecules including intracellular proteins that are difficult to crystallize, as well as significantly improving research efficiency. We hope that it will enhance our Structure Based Drug Design capability and increase the success rate of compound development. This system we introduced is provided by Thermo Fisher Scientific, and installed at Kamakura research laboratories for the structural analysis of a variety of drug candidate compounds including mid-size molecule drugs.

“The introduction of cryo-EM is expected to greatly transform Chugai’s drug discovery process. It will further enhance the quality and speed of Structure Based Drug Design, and accelerate the discovery of mid-size molecule drugs which we aim to establish as the third modality,” said Dr. Osamu Okuda, Chugai’s President and CEO. “Chugai’s drug discovery is supported by its unique scientific and technological capabilities. We will continue to rigorously adopt advanced technologies to realize innovations that contribute to resolve unmet medical needs.”

About cryo electron microscopy (Cryo-EM)

Cryo-electron microscopy (Cryo-EM) is a powerful biophysical technique that allows researchers to visualize molecular assemblies at near-atomic resolution. With the rapid technological advancements, structural elucidation of biological molecules such as protein has been rapidly increased, in particular for intractable biological molecules by existing methods such as X-ray crystallography and NMR technique.

Cryo-EM has been recently applied in the pharmaceutical industry around the world due to its ability to accurately and rapidly visualize the intricate interactions between drug and receptor, enabling informed, accelerated drug discovery and structure based drug design.

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