Epsilon Molecular Engineering ®

PRESS RELEASE

February 21th, 2024
Epsilon Molecular Engineering, Inc.

EME and ONO Announce Collaboration Agreement on Creating Novel VHH antibody drug discovery

Epsilon Molecular Engineering, Inc. (HQ: Saitama, Japan; President & CEO: Naoto Nemoto; "EME") and ONO Pharmaceutical Co., Ltd. (HQ: Osaka, Japan; President, Representative Director: Gyo Sagara; "ONO") announce that it entered into collaboration agreement on creating novel VHH pharmaceuticals for some of ONO's drug discovery targets using EME's proprietary VHH discovery platform" *The Month*".

EME and ONO will prepare antigen for a target. EME will identify humanized VHHs with "The Month". ONO will conduct *in vitro* and *in vivo* assay to them.

Under the term of this agreement, EME receives an undisclosed upfront payment this year and milestone payments based on the progress of non-clinical and clinical trials.

【About "The Month"】

"The Month" is a high throughput antibody screening platform based on cDNA display technology. By combining that with our proprietary humanized VHH antibody artificial library, *PharmaLogical*® Library, we can acquire a large number of VHH antibodies in about one month against tough targets that are difficult to obtain with conventional methods. This library has a vast size ranging from 10 trillion to 100 trillion and is specifically designed to reflect the structural features of VHH antibodies, demonstrating antigen recognition distinct from conventional antibodies.

【Key Features of *PharmaLogical*® Library】

- Design based on crystal structure analysis data of VHH antibody
  A humanized VHH library designed based on the structural characteristics resulting from the crystal structure analysis data of the human sequence and VHHs that have already been clinically applied to the antibody framework part (FR). The three CDRs (Complementarity Determining Regions) that form the antigen recognition site are designed based on the structural property information obtained from the alpaca-derived VHH, and are known to contribute most to antigen binding. By randomizing the CDR3s, large diversity is demonstrated.

- Design to minimize the frequency on occurrence of amino acids that cause heterogeneity in formulation
  Amino acids that are susceptible to modification and that can cause major structural changes, such as cysteine and proline residues, cause heterogeneity in the formulation process. By designing a CDR that minimizes the frequency of appearance of these amino acids, it can be expected to minimize the problems that arise in the drug discovery process

- Innovative VHH screening method by combining *PharmaLogical*® Library with cDNA display
  The combination of *PharmaLogical*® Library which has a diverse library size of $10^{13\text{-}14}$ (10 trillion to 100 trillion), and a screening system based on the cDNA display technology enables an innovative VHH screening.

【About Epsilon Molecular Engineering】

EME is a startup company that has been pioneering the development of innovative biomolecules based on evolutionary molecular engineering since 2016. Leveraging proprietary screening technologies and molecular design methods, EME engages in collaborative research activities primarily in the medical field, focusing on the development of next-generation antibody therapeutics, diagnostic agents, and regenerative medicine reagents. EME will create functional biomolecules essential for the society of tomorrow, contributing to the lives of many individuals.
Website: https://www.epsilon-mol.co.jp/eng/

【About ONO Pharmaceutical Co., Ltd. 】

Ono Pharmaceutical Co., Ltd., headquartered in Osaka, is an R&D-oriented pharmaceutical company committed to creating innovative medicines in specific areas. Ono focuses its research on oncology, immunology, neurology and specialty research with high medical needs as priority areas for discovery and development of innovative medicines.
Website: https://www.ono-pharma.com/en

【Contact】

Epsilon Molecular Engineering, Inc.
Business Development Department
TEL:+81-48-858-6465 E-mail : biz_dev@epsilon-mol.co.jp

Ono Pharmaceutical Co., Ltd.
Corporate Communications
TEL:+81-6-6263-5670