

PRESS RELEASE

February 7, 2023

Epsilon Molecular Engineering, Inc

ASKA Pharmaceutical Co., Ltd.

EME and ASKA Announce Collaboration Agreement on Creating Novel *PharmaLogical*® VHH to address an unmet medical need in Obstetrics and Gynecology

Japan – February 7, 2023 – Epsilon Molecular Engineering, Inc. (HQ: Saitama, Japan; President & CEO: Naoto Nemoto; “EME”) and ASKA Pharmaceutical Co., Ltd. (HQ: Tokyo, Japan; President, Representative Director: Sohta Yamaguchi; “ASKA”) announce that it entered into collaboration agreement on creating a novel *PharmaLogical*® VHH(*1) for a target in the field of obstetrics and gynecology using EME’s proprietary discovery platform “*The Month*”, and design platform for optimization.

”*The Month*”

EME’s proprietary technology enabling to identify druggable VHH, “*PharmaLogical*® VHH”(*2), by combination of *PharmaLogical*® Library (*3) and cDNA display(*4).

EME will identify *PharmaLogical*® VHH with the platform and create drug candidates with the design platform. ASKA will prepare antigen for a target and conduct in vitro and in vivo assay.

Under the term of this agreement, EME receive an undisclosed upfront payment this year and milestone payment in meeting the criteria.

*1 VHH: Variable Domain of Heavy Chain of Heavy Chain Antibody found in camelids. Superior stability and easily molecularly designed than conventional IgG

*2 *PharmaLogical*® VHH: Druggable VHHs identified from *PharmaLogical*® Library

*3 *PharmaLogical*® Library: EME’s proprietary humanized synthetic VHH library structurally based design with the purpose of recognition for epitope that conventional IgG unable to recognize

*4 cDNA display: Most stable and diverse genotype-phenotype coupling using cell-free translation system, enabling 10¹³-10¹⁴ repertoires of VHHs to be screened at once

【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 VHH 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 10¹³-14 (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 biotech and pharmaceutical company specialized in VHH that has been developing as an innovative modality and drugs based on evolutionary molecular engineering since 2016. Taking advantage of our unique screening technology and molecular design method, we are engaged in research and development of diagnostic agents and reagents for regenerative medicine as well as drug development. With the corporate mission of "creating future biomolecules," we aim to contribute to a wide range of society and people's lives.

Website: <https://www.epsilon-mol.co.jp/eng/>

【About ASKA Pharmaceutical Co., Ltd. 】

Since its foundation in 1920, ASKA has concentrated its management resources in three core areas: internal medicine, obstetrics and gynecology, and urology, based on its corporate philosophy "Contribute toward the improvement of people's health and progress in medicine through the development of innovative products". In addition, ASKA has been actively engaged in the development of new drugs to solve medical needs.

Website: <https://www.aska-pharma.co.jp/>

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