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NB Health Laboratory and FRONTEO Signed PoC (Proof of Concept) Research Agreements

Combining AI-Driven Drug Discovery with Antibody Drug Discovery Platform to Create Novel Antibody Drug Pipelines Targeting GPCRs

Sapporo, JAPAN, Oct. 1, 2025 – NB Health Laboratory Co., Ltd. (Headquarters: Sapporo, Japan ; President and CEO: Kiyoshi Takayama; hereinafter “NBHL”), dedicated to discovering and developing antibody drug[*1] , and FRONTEO Inc. (Headquarters: Tokyo, Japan ; President and CEO: Masahiro Morimoto; hereinafter “FRONTEO”) supporting the decision-making of professionals through its proprietary, domain-specific AI, KIBIT, announced that they have entered into two Proof of Concept (PoC) research agreements.

The collaboration combines FRONTEO's AI-driven drug discovery support service, “Drug Discovery AI Factory (hereinafter DDAIF)[*2],” with NBHL's platform “MoGRAA[*4],” specialized in discovering antibody drugs targeting GPCRs[*3]. The goal is to jointly create novel antibody drug pipelines.

■FEATURES OF BOTH COMPANIES

FRONTEO offers an AI-driven drug discovery support service, “DDAIF”, powered by proprietary domain-specific AI “KIBIT”. Its unique capability uncovers hidden relationships not described in existing scientific literature and enables the discovery of previously unreported target molecules with high disease relevance, along with hypotheses on the underlying disease mechanisms that support these findings. DDAIF leverages proprietary AI technology and analytical methods to generate breakthrough discoveries of novel relationships between diseases and target molecules[*5] not documented in existing literature in a non-linear manner.

It can facilitate the identification of highly novel drug targets and elucidate disease mechanisms.

NBHL harnesses its core technology, its proprietary antibody discovery platform “MoGRAA” for GPCRs to continuously generate multiple antibody drug pipelines. MoGRAA efficiently discovers highly selective antibodies that can control the function of GPCRs with complex structures. NBHL is pioneering the creation of novel therapeutic pipelines targeting GPCRs, long regarded as one of the most challenging frontiers in drug discovery.

■REGARDING THE APPROACH TO THIS AGREEMENT

Under this agreement, the two companies will combine their respective proprietary drug discovery platforms to pursue two main objectives:

1. Enhancing the strategic value of NBHL's existing antibody drug pipeline
2. Exploring new opportunities for novel GPCR drug target discovery.

GPCRs are considered attractive drug discovery targets, and numerous drugs, primarily small molecules[*7], have been developed. However, many development efforts have been abandoned due to issues such as off-target side effects [*8].

Through this initiative, the two companies aim to pave the way for the creation of truly innovative antibody drugs by combining DDAIF and MoGRAA. This approach targets GPCRs that were previously difficult to target for drug discovery, as well as GPCRs whose association with diseases was uncovered. Furthermore, by systematically and comprehensively analyzing the relationship between GPCRs and diseases, the companies will work to establish strategic pipeline creation and new drug discovery processes.

■BUILDING A DRUG DISCOVERY ECOSYSTEM

Currently, the Japanese government is promoting the enhancement of drug discovery capabilities through building a drug discovery ecosystem, including the establishment of the “Public-Private Council for Enhancing Drug Discovery Capabilities”*[9]. This initiative by FRONTEO and NBHL aligns with this direction, holds significant importance for promoting the creation of Japan-originated medicines, and contributes to strengthening industrial competitiveness and medical security. The current ecosystem faces various challenges in terms of feasibility and optimality, resulting in a gap between its potential and the anticipated economic benefits. This initiative represents a new solution to bridge that gap and is expected to directly contribute to strengthening Japan's drug discovery capabilities.

■ Comment from Jun Takasaki, Director and Chief Science Officer, NB Health Laboratory Co., Ltd.

“While GPCRs are recognized as important drug targets across many diseases, their structural complexity has long presented significant challenges for antibody drug discovery. At NBHL, we have developed our proprietary platform MoGRAA, which enables the efficient discovery of highly selective antibodies capable of modulating GPCR functions, and we have been advancing the creation of antibody therapeutics targeting these receptors.

We are delighted to collaborate with FRONTEO by combining our MoGRAA technology with DDAIF, their AI-powered drug discovery support system that integrates the expertise of drug discovery researchers and AI engineers, powered by the natural language processing−based AI KIBIT. This collaboration will accelerate and advance GPCR antibody drug discovery.

By working together with FRONTEO’s cutting-edge technology and research team, we aim not only to maximize the potential value of our antibody drug candidates but also to uncover novel associations between diseases and GPCRs, ultimately leading to the creation of innovative antibody drugs. We are committed to pushing this initiative forward so that we can continue delivering groundbreaking and effective treatments to patients worldwide.”

■ **Comment from Hiroyoshi Toyoshima, Director and Chief Science Officer, FRONTEO Inc.**

“At FRONTEO, our AI drug discovery business leverages KIBIT, our proprietary AI specialized in natural language processing, combined with the expertise of drug discovery researchers and AI engineers. Through our AI drug discovery support service DDAIF, we provide powerful assistance to researchers’ decision-making by analyzing disease-related gene networks and generating hypotheses regarding potential drug targets.

We are very pleased to embark on this initiative with NBHL, which has a unique antibody drug discovery platform and established multiple therapeutic pipelines. At FRONTEO, we have set forth our research policy to co-create drug discovery in partnership with organizations that bring outstanding technologies, an approach we describe as the ‘FRONTEO Co-Creation Ecosystem.’ This collaboration is a prime example of that vision in action.

Our strength lies in hypothesis-driven creation, evaluation, and enhancement of the value of novel pipelines. We consider NBHL, with its robust antibody discovery expertise and proprietary technology, an ideal partner. By synergizing our capability to uncover associations between target molecules and diseases and generate new hypotheses in a non-linear manner, with NBHL’s deep knowledge and unique technologies for antibody generation, we aspire to comprehensively elucidate GPCR–disease relationships. Together, we aim to pioneer the development of innovative therapeutics and contribute to improving patients’ quality of life.”

FRONTEO and NBHL will contribute to the research and development of innovative pharmaceuticals and therapies, the advancement of medical and pharmaceutical research, the growth of the pharmaceutical industry, and the improvement of healthcare quality and patient quality of life by leveraging their respective technologies and expertise and

maximizing their synergistic effects. We aim to contribute to making Japan a hub for drug discovery once again and to growing the pharmaceutical industry into a core industry alongside automobiles and semiconductors. We strive toward a fair world where appropriate medicines are accessible to all who need them.

＊1 Antibody-based drug: Therapeutic agents created by artificially producing “antibodies”—substances that bind to and neutralize antigens (foreign substances that trigger immune responses, such as viruses, allergens, or characteristic proteins on cancer cell surfaces)—using technologies like genetic recombination. They are characterized by minimal side effects and potentially higher therapeutic efficacy, as they do not affect cells or tissues lacking the antigen.

＊2 DDAIF: An AI-driven drug discovery support service where FRONTEO's drug discovery experts, well-versed in AI and drug discovery, leverage the natural language processing technology of their proprietary domain-specific AI “KIBIT” and unique analytical methods to provide target molecule and indication discovery, along with supporting hypotheses.

＊3 GPCR: Receptors located on the cell membrane. They function to transmit various signals from outside the cell into the cell interior. Approximately 800 types exist in humans. Due to their involvement in diverse diseases, they are considered important drug discovery target molecules and are the targets of many existing pharmaceuticals.

＊4 MoGRAA: An antibody drug discovery platform independently developed by NBHL. This technology enables the highly efficient and highly selective acquisition of antibodies, particularly targeting GPCRs, which are crucial drug discovery targets.

＊5 Target molecule: The molecule (gene) that a drug is designed to act upon.

＊6 Selectivity: The degree to which a drug acts on a specific site compared to other sites.

＊7 Small-molecule drugs: Pharmaceuticals manufactured by chemical synthesis with a relatively small molecular weight (the sum of the atomic weights of the atoms composing the molecule) of 500 or less. They constitute the majority of current pharmaceuticals.

＊8 Off-target: The phenomenon where a drug acts on molecules other than its intended target.

＊9 Cabinet Office of Japan “Public-Private Council for Enhancing Drug Discovery Capabilities”, https://www8.cao.go.jp/iryou/kanmin_kyogikai.html

＊10 FRONTEO Co-creation Ecosystem：FRONTEO's proposed research and development policy. A framework for jointly creating new drug discovery processes and innovative pharmaceuticals through collaboration with multiple partners possessing outstanding technologies and expertise.

■ABOUT NB HEALTH LABORATORY CO., LTD.

URL: https://nbhl.co.jp/

NBHL is a biotechnology company specializing in the research and development of antibody therapeutics. It particularly advances a drug discovery approach targeting GPCRs—which are crucial drug targets yet traditionally difficult to develop—using its proprietary antibody drug discovery platform technology, “MoGRAA.”

Based on MoGRAA, NBHL enables the highly efficient and selective acquisition of antibodies, aiming to transform GPCRs—previously abandoned as targets due to side effect concerns in small molecule drug development—into new therapeutic targets. The company already possesses multiple promising drug pipelines and is accelerating R&D targeting areas with high unmet medical needs.

Furthermore, by actively collaborating with partner companies and research institutions both domestically and internationally, NBHL is committed to contributing to human health and the advancement of medicine through the creation of innovative antibody therapeutics.

About FRONTEO Inc.

URL: https://www.fronteo.com/

FRONTEO supports the decision-making of professionals who are addressing critical social issues and fosters innovation through its proprietary domain-specific AI, KIBIT. Unlike general-purpose AI, FRONTEO’s patented natural language processing (NLP) technology (patented in Japan, the U.S., and Europe) does not rely on the size of training datasets or computing power, enabling high-speed and highly accurate analysis. Furthermore, FRONTEO’s patented visualization technology maps the analyzed information, making it possible for KIBIT to directly enhance expert insights. In recent years, this technology has been applied to drug discovery, supporting hypothesis generation and target identification.

Through its unique technologies and approaches, FRONTEO pursues its corporate philosophy: “Providing solutions that uncover hidden risks and opportunities buried in records, and realizing fairness in the information society.” To this end, the company advances real-world applications across multiple domains, including:

1. Life Science AI
2. Risk Management (business intelligence, compliance support, economic security, and legal technology AI)
3. Digital Transformation (DX) (business intelligence and professional support)

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