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Hitachi, Ltd.

MOLCURE Inc.

Hitachi to Develop Confidential AI Platform to Accelerate AI-Driven Drug Discovery via Open Innovation; Full-Scale Co-creation with MOLCURE Toward Service Launch

Enabling secure collaboration without disclosing highly confidential data or AI models; to be deployed as part of Hitachi's HMAX Industry service offering

Hitachi, Ltd. ("Hitachi") is developing a Confidential AI Platform (the "Platform") to accelerate AI-driven drug discovery through open innovation. The Platform leverages Hitachi's confidential information management technologies*¹ and domain knowledge in pharmaceuticals, IT, and AI. It enables pharmaceutical companies, academic institutions and others to securely collaborate by integrating their highly confidential research data with the AI models of AI drug discovery startups without mutual disclosure, thereby promoting the use of AI in drug discovery and contributing to greater efficiency in the drug discovery process. Through co-creation with MOLCURE Inc. ("MOLCURE"), which has strengths in AI models for drug discovery, Hitachi will move forward with full-scale considerations toward launching an OI (Open Innovation*²) Platform Service for Drug Development (the "Service") based on the Platform in FY2026.

The Service will initially support antibodies, where MOLCURE has particular strengths, with future expansion envisioned to a wide range of modalities such as nucleic acids and peptides. In addition, Hitachi aims to provide a function that matches the technology needs of pharmaceutical companies, academic institutions and others with the seeds (technologies and expertise) held by startups, while maintaining confidentiality.

Hitachi's confidential information management technology utilizes advanced encryption to ensure robustness, preventing the restoration of original information even in the event of a data leak. MOLCURE's AI models, meanwhile, have been trained on high-quality data collected through a combination of evolutionary molecular engineering and laboratory automation technologies. By preparing on the Platform a suite of programs necessary for drug discovery operations, such as fine-tuning tools, Hitachi will provide an environment where users can develop original AI using their own data, based on distinctive AI models of startups such as MOLCURE.

Hitachi and MOLCURE conducted a Proof of Concept (PoC), completed in March, to verify the usefulness of the Platform, confirming that training and inference can be performed securely while keeping both training data and AI models confidential. Looking ahead, the companies aim to further promote open innovation among pharmaceutical companies, academia, and startups through the Service by inviting broader participation from industry stakeholders — including contract research organizations (CROs), biotech companies, and academic institutions — seeking AI drug discovery partners and AI services.

Hitachi also aims to evolve the Service into a consortium model that brings together companies, academic institutions, municipalities, and other stakeholders to work toward shared goals in

technology development and new business creation. In addition, Hitachi plans to deploy the Service in the biopharmaceutical field, a focus area for the company, as a service supporting HMAX Industry and embodying Lumada 3.0.*4

For industrial sectors, Hitachi is focusing on HMAX Industry, a suite of next-generation solutions that combines domain knowledge and advanced AI with data from Hitachi's extensive installed base of products (digitalized assets). Through this approach, Hitachi aims to transform frontline operations while contributing to the improvement of people's well-being.

*1 Confidential Information Management Technology: Technology that enables search and computational processing while data remains encrypted. Hitachi provides services that reconcile privacy protection and data utilization by leveraging technologies such as searchable encryption.

*2 Open Innovation (OI): A methodology for creating innovative business models, products, and services by combining technologies, ideas, and know-how from external partners—including other companies, universities, and research institutions—as well as from within one's own organization. In the field of drug discovery, its importance is growing against a backdrop of diminishing drug discovery seeds and rising development costs.

*3 Modality: A classification of the fundamental technological platform or approach underlying a pharmaceutical product.

*4 Lumada 3.0: An evolution of Lumada powered by AI enhanced with Hitachi's domain knowledge. Lumada is the collective name for solutions, services, and technologies that utilize Hitachi's advanced digital technologies to create value from customer data and accelerate digital innovation.

Background

In recent years, pharmaceutical development has faced challenges such as soaring R&D costs, declining success rates, and lengthening development timelines. As a solution, the practical application of AI-driven drug discovery is progressing rapidly worldwide. According to Global Information, the global market for AI in drug discovery was valued at USD 1.8 billion in 2022 and is projected to grow from USD 2.34 billion in 2023 to USD 19.35 billion by 2031, with a CAGR of 30.2% over the forecast period (2024–2031)*5.

However, data handling remains a challenge in advancing AI drug discovery. At present, common approaches include providing anonymized (masked) compound data under strict Non-Disclosure Agreements (NDAs) or training AI separately on physically isolated dedicated servers. With these methods, however, a dilemma arises whereby stronger masking used to enhance data confidentiality leads to lower AI training accuracy. Furthermore, since the risk of leakage of a company's highly confidential information cannot be eliminated entirely, large-scale data sharing among multiple companies has been slow to advance. In addition, the data, latest technologies, and specialized expertise essential for drug discovery are dispersed not only across pharmaceutical companies but also among academia and startups, making it difficult for any single company to conduct development on its own. In Japan, moreover, a shortage of IT and AI professionals often hinders smooth collaboration across organizations.

To address these challenges, demand is rapidly growing for environments in which multiple stakeholders can securely leverage data and AI while ensuring high levels of safety and reliability.

*5 Source: Global Information, Inc.

Mutual Protection of Data and AI Models via Hitachi's Proprietary Confidential Information Management Technology

The Platform utilizes Hitachi's confidential information management technology, comprising searchable encryption and TEE (Trusted Execution Environment),*6 which provides a framework for the secure storage and use of confidential data and personal information. By combining "searchable encryption technology," which allows database searches while data remains randomized, with a hardware-isolated secure memory execution environment, the technology fundamentally reduces the risk of information leakage and provides robust security for data utilization in cloud environments. This allows pharmaceutical companies to bring their drug discovery targets and experimental data, and AI drug discovery partners to bring their AI models and algorithms, into a randomized or isolated environment.

Even when a pharmaceutical company conducts joint research simultaneously with multiple drug discovery startups, this also helps mitigate risks such as the commingling of data and models or the unintended incorporation of another company's intellectual property into its own deliverables. As a result, both parties can conduct AI training and inference in a shared computing environment while keeping their contents hidden from each other, enabling advanced joint research and co-development while minimizing the risk of information leakage and intellectual property outflow.

*6 TEE (Trusted Execution Environment): A hardware-isolated secure execution environment within a processor (CPU/GPU). Because even the operating system or users with administrator privileges cannot inspect or tamper with memory contents within this area, it is well-suited for processing highly confidential data and executing AI models.

Hitachi's Capabilities in the Pharmaceutical Field and Track Record in Confidential Information Management Technology

For many years, Hitachi has built a rich track record and deep domain knowledge in the pharmaceutical field through its One Hitachi approach. This encompasses a wide range of IT, OT, and products—including production facilities and equipment such as Cell Culture Plant, scale-up technologies such as Cell Culture Simulation, Robotics SI, the HITPHAMS manufacturing and quality management system, Hitachi Digital Solution for Pharma, and ERP.

In addition, Tokumei Bank, which utilizes Hitachi's proprietary confidential information management technology, has a broad track record, particularly in the public and healthcare sectors, as a cloud platform that can handle confidential information in a randomized and pseudonymized form. Hitachi provides innovative services by combining these IT, OT, and product capabilities through the One Hitachi approach.

Related Sites

About Hitachi's confidential information management service "Tokumei Bank"

https://www.hitachi.com/products/it/lumada/global/en/spcon/uc/uc_01724s/index.html

Website for "Hitachi Digital Solution for Pharma"

<https://www.youtube.com/watch>

Hitachi's "Biopharmaceutical plants" website

https://www.hitachi.com/businesses/infrastructure/product_site/medicine/products/plant/bio.html

Hitachi's "Cell Culture Simulation" website

<https://www.hitachi-hps.co.jp/business/lifescience/biopharmaceutical/index.html>

*This linked page is available in Japanese only.

Hitachi's "Factory Automation" website

<https://www.jrautomation.com/>

Website for "HITPHAMS," Hitachi's manufacturing and quality management system for the pharmaceutical and medical device industries

https://www.hitachi.com/businesses/infrastructure/product_site/medicine/products/hitphams/index.html

Hitachi's ERP website

<https://www.hitachi.co.jp/products/it/industry/solution/sap/index.html>

*This linked page is available in Japanese only.

Trademark Notes

"HITPHAMS" and "Tokumei Bank" are registered trademarks of Hitachi, Ltd.

Other company names and product names mentioned are trademarks or registered trademarks of their respective companies.

About Hitachi, Ltd.

Through its Social Innovation Business (SIB) that brings together IT, OT(Operational Technology) and products, Hitachi contributes to a harmonized society where the environment, wellbeing, and economic growth are in balance. Hitachi operates globally in four sectors – Digital Systems & Services, Energy, Mobility, and Connective Industries – and the Strategic SIB Business Unit for new growth businesses. With Lumada at its core, Hitachi generates value from

integrating data, technology and domain knowledge to solve customer and social challenges. Revenues for FY2024 (ended March 31, 2025) totaled 9,783.3 billion yen, with 618 consolidated subsidiaries and approximately 280,000 employees worldwide. Visit us at www.hitachi.com.

About MOLCURE Inc.

MOLCURE Inc. is a leader in AI-driven drug discovery for antibodies and peptides. Its platform combines cutting-edge large language models (LLMs), physics-based simulations, and high-quality experimental data from its in-house labs. This approach enables the discovery of innovative biologics that are safer and more effective, making it possible to tackle undrugged targets that other technologies cannot reach. MOLCURE works with forward-thinking partners, including leading pharmaceutical companies, to accelerate R&D and help bring life-changing new treatments for patients around the world. As of April 1, 2026, the company is advancing a total of 28 collaborative projects with 19 partners. Founded in 2013, MOLCURE is based in Japan, with headquarters in Kawasaki and a research facility in Tsuruoka. Learn more at <https://molcure.com>.

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