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FOR IMMEDIATE RELEASE

MedInsights and Biologie Fonctionnelle et Adaptative (BFA) from UPCité collaboration

A project at the crossroads of multi-omics, behavior and artificial intelligence

[Paris, France] – MedInsights, a leading artificial intelligence-driven biotech company, is revolutionizing the development of transformative therapies for metabolic and metabo-inflammatory diseases through its innovative Nexus-Rx engine. Leveraging explainable AI and deep graph learning, MedInsights is accelerating the identification and optimization of drug candidates, aiming to deliver breakthrough treatments to patients worldwide.

The laboratory of Biologie Fonctionnelle et Adaptative (BFA) at the Université Paris Cité (UPCité) will host MedInsights for a long term collaboration starting in August 2025. This initiative aims to explore new diagnostic and therapeutic approaches, particularly in the context of metabolic disorders and compulsive/addictive disorders.

## A strengthened experimental and discovery approach

A genetic polymorphism is associated with increased vulnerability to metabolic disorders and addictive behaviors. This variant affects a gene encoding a kinase, an enzyme whose function remains unknown. Although no precise mechanism has been identified to date, a strong correlation has been established between this polymorphism and several behavioral and metabolic phenotypes.

The project aims to leverage artificial intelligence, machine learning and computer vision technologies developed by MedInsights to identify compounds capable of targeting this kinase or its signaling pathway.

The objective is twofold:

⇒ Better understand the functional role of this kinase in the observed phenotypes
⇒ Demonstrate the ability of predictive AI tools to generate relevant and verifiable results in vivo, particularly in the field of discovering new therapeutic targets.

The BFA laboratory team has developed experimental models allowing the targeted invalidation of the gene in question. These models provide a unique framework for studying behavioral and metabolic phenotypes associated with polymorphism and for testing the biological efficacy of compounds identified by artificial intelligence.
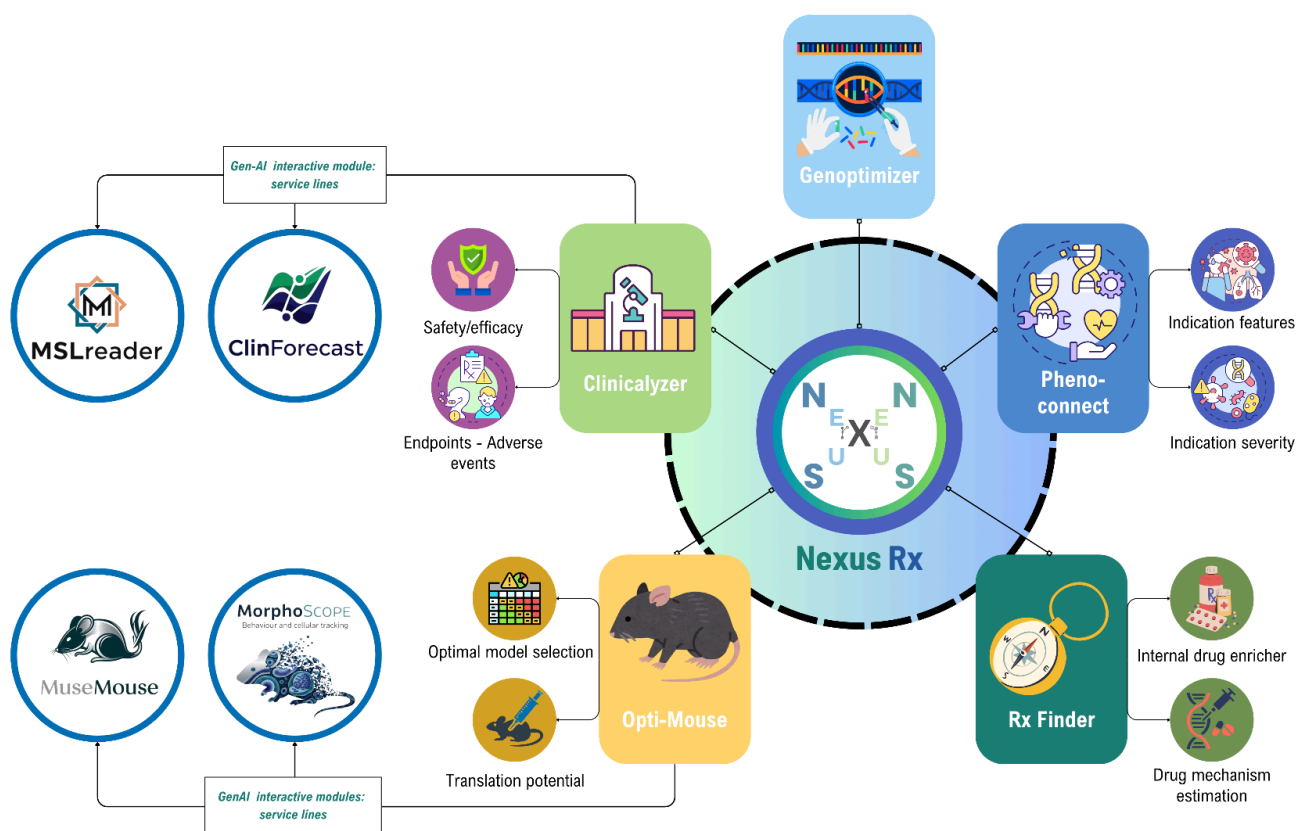
MedInsights role: NexusRx

The "NexusRx" framework offers a cutting-edge, computational approach to revolutionize drug discovery and development. At its core, it employs a **digital twin model** of biological systems, essentially creating highly detailed virtual replicas of metabolic pathways. The framework power comes from integrating diverse and sophisticated methodologies: **graph theory** used to represent complex biological interactions as networks, enabling the identification of key nodes and pathways; **thermodynamics** to understand the energy flow and feasibility of reactions within these systems; **game theory** to model competitive interactions between drugs and disease processes; and **perturbation and centrality analysis** to pinpoint critical points within the networks that, when targeted, could have a significant therapeutic effect. Through these advanced computational techniques, NexusRx generates crucial outputs that directly address bottlenecks in drug development. It can **identify novel drug targets** by uncovering previously unknown intervention points in disease networks. It facilitates **indication expansion**, finding new uses for existing drugs, which is a highly efficient way to bring therapies to patients. The platform also offers **mechanism prediction** with high accuracy, forecasting how compounds will behave, and **novel application discovery** to extend the lifecycle of existing products. Finally, it helps in **biomarker discovery**, identifying indicators that can predict patient responses to treatments, leading to more personalized and effective clinical trials.

Key differentiators

The NexusRx platform boasts deep roots in both academic and clinical institutions, enabling it to continuously integrate new discoveries and data. This foundational strength provides access to rare and **highly valuable patient datasets**, encompassing multi-omics, Electronic Health Records (EHR), and metabolomic information. Its scientific rigor is evidenced by **peer-reviewed validation** in high-impact journals. It employs proprietary algorithms, including **custom-developed unbiased metrics** specifically designed for complex biological networks, ensuring an unbiased analysis factor. This innovative approach translates to a **70% higher success rate** in identifying viable drug/target opportunities compared to traditional methods. Furthermore, the platform is supported by combined scientific and laboratory validation studies, and importantly, it delivers explainable results that meet critical operational requirements, fostering trust and facilitating adoption in the pharmaceutical and healthcare industries.

"At MedInsights, we believe that the future of medicine lies at the intersection of advanced AI and deep biological understanding," says Soham Saha, Founder and CEO of MedInsights. *"Our Nexus-Rx platform is designed to unlock new therapeutic avenues, offering hope to millions affected by multi-morbid cardio-metabolic and neuro-metabolic conditions. We are committed to collaborating with research institutions and pharmaceutical partners to bring these life-changing discoveries to reality."*

"MedInsights has visited our laboratory several times to present their work. It became clear to us that their expertise in AI/ML and computer vision now represents an essential lever for advancing our projects towards more competitive publications, better data exploitation, and new funding opportunities. Beyond this project, this collaboration could herald the establishment, at Université Paris Cité, of an innovative CRO (Contract

Research Organization) offering to industrial companies and startups, thereby enriching UPCité's scientific services", says Prof. Serge Luquet, CNRS DR1 Research Director, Director of the COFFEE team at the BFA CNRS UMR 8251 laboratory.

Background

Collaborations and Partnerships: Academic and Research Collaborations:

MedInsights has established strong partnerships with several leading academic and medical institutions to share knowledge, resources, and expertise.

- **Karolinska University Hospital and Karolinska Institutet:** This collaboration with the globally recognized Swedish medical university and hospital focuses on clinical research and the application of new technologies to identify diagnostic and therapeutic targets for cardiometabolic conditions with multi-morbidity profiles. A robust dataset of 2.9 million patient datasets will serve as a platform for future growth.
- **Institut Necker Enfants Malade (INEM) and Institut Imagine:** Located in Paris, these institutions are at the forefront of research into genetic and rare diseases. MedInsights' collaboration with them involves working on complex multi-omics data to identify new diagnostic or therapeutic approaches for neurometabolic and rare hematologic disorders.
- **Hôpital Salpêtrière and Assistance Publique - Hôpitaux de Paris (AP HP):** The partnership with this historic Paris hospital and large hospital trust provides MedInsights with access to a vast patient population and a wide range of clinical data in amyotrophic lateral sclerosis (ALS). This is essential for validating and refining medical insights and predicting disease progression.

Consortia and Networks:

MedInsights also actively participates in broader consortia and networks, which allows the company to contribute to and benefit from larger, international research efforts.

- **Repo4EU:** This is a European Union-funded initiative focused on drug repositioning, policy making and stakeholder engagement. By participating in Repo4EU, MedInsights is involved in a network that aims to find new uses for existing drugs, which accelerates patient access.
- **Paris Biotech Santé:** This network connects various biotech and healthcare players in the Paris region. MedInsights' participation in this network helps them to stay connected with the local biotech ecosystem, fostering opportunities for collaboration, innovation, and business development.

Company Milestones:

- **Drug Candidate Identification and Development:** MedInsights successfully identified and validated drug candidates targeting rare mitochondrial disorders in collaboration with a leading French biotech company. This partnership demonstrates the power of MedInsights' technology in accelerating the discovery of novel therapies for unmet medical needs.

- **Clinical Intelligence Projects:** The company has initiated strategic projects focused on clinical intelligence with two multinational pharmaceutical companies. These collaborations leverage MedInsights' advanced analytical capabilities to help partners derive deeper insights from complex clinical data.
- **NEXUS-Rx Commercialization:** MedInsights has officially commercialized its flagship platform, NEXUS-Rx, offering it in both platform and modular modalities. This allows clients to integrate the full suite of MedInsights' tools or select specific components to enhance their existing R&D processes.
- **Scientific Validation:** The NEXUS-Rx platform and its interconnected modules have undergone rigorous scientific scrutiny, with their preclinical validation/ use cases published in over five peer-reviewed publications. This extensive validation confirms the platform's reliability and effectiveness.
- **EUROSTARS Laureate 2025:** MedInsights was awarded the EUROSTARS grant for the 2025 call of EUREKA-EUROSTARS, in collaboration with the Karolinska Institutet and Karolinska University Hospital. This significant funding will support cutting-edge research and further strengthen the company's position in the European R&D landscape.

About MedInsights: MedInsights is an innovative biotech company at the forefront of AI-driven drug discovery. Specializing in metabolic and metabo-inflammatory diseases, MedInsights leverages its proprietary Nexus-Rx engine, powered by explainable AI and deep graph learning, to identify and optimize novel drug candidates. Committed to accelerating the development of transformative therapies, MedInsights partners with leading research institutions and pharmaceutical companies to bring precision medicine solutions to patients.

About Laboratoire BFA: The C3ADE/COFFEE team at the lab is particularly interested in how the brain regulates energy balance, in relation to eating behavior, pleasure, and metabolic disorders such as obesity and diabetes.

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