

Korea Machine Learning Ledger Orchestration for Drug Discovery(K-MELLODDY) Project

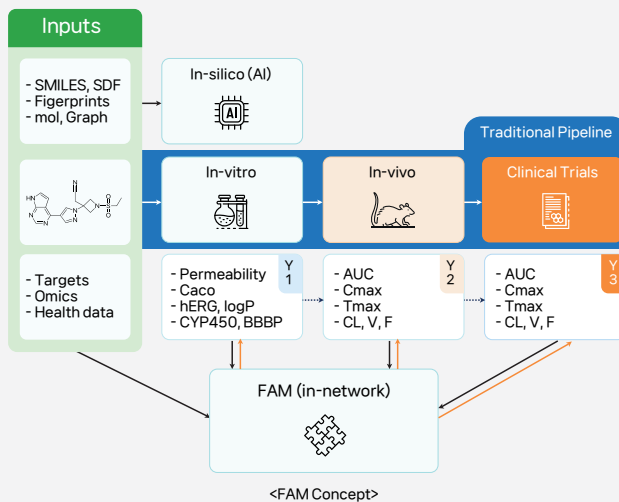
Overview The K-MELLODDY project aims to build and operate an AI-driven drug discovery platform that allows pharmaceutical companies, hospitals, universities, and government research institutions to collaboratively develop AI models while preserving the privacy of sensitive experimental data.

- ☑ The EU-led MELLODDY project is a collaborative initiative in which 10 pharmaceutical companies—including Merck, Janssen, Novartis, AstraZeneca, and Bayer—jointly developed AI models based on Federated Learning (FL).

Budget/Duration USD 25 million / April 2024 – December 2028 (5 years)

- Goals**
- Build a Federated Drug Discovery (FDD) acceleration platform
 - Develop a Federated ADMET Model (FAM)

- ☑ Federated Learning: A technology that allows participating institutions to collaboratively develop a high-performance AI model by sharing only model parameters, without transferring their data outside their organizations.
- ☑ FAM: An AI model that links in-vitro, in-vivo, and in-human (clinical trial) data through federated learning to predict ADMET and clinical pharmacokinetic(PK) parameters as endpoints. The model continuously improves in performance as additional data is integrated.



Specific tasks

Platform Development (1 project)	Data Provision & Utilization (20 projects)	AI Model Development (15 projects)
Build a Federated Drug Discovery (FDD) platform and operate the Federated ADMET Model (FAM) solution.	Participating institutions—including pharmaceutical companies, hospitals, and research institutes—will supply experimental data and utilize the FAM solution.	Develop the FAM solution software (Select 5 institutions annually from Year 1 to Year 3)

Expected Outcomes

- Establishing a Data-driven Open Innovation Ecosystem
 - Foster an open innovation ecosystem where even competing institutions can collaborate based on their proprietary data.
 - Enable AI Model Developers to transition from traditional 1:1 data matching to a platform-based 1:N model, accelerating model validation and deployment.
- Advancing as a Global Leader in AI-Based Drug Development
 - Reduce R&D costs and time by developing integrated ADMET/PK prediction models that span the entire drug development cycle.
 - Enable the development of a wide range of AI models across the drug development pipeline, based on FAM.
 - Promote global collaboration through the FDD platform and FAM.

