# What matters most: AI × data driven R&D for corporate innovation

Kirin Holdings Company Limited, Fujitsu Limited

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Advancing human progress together

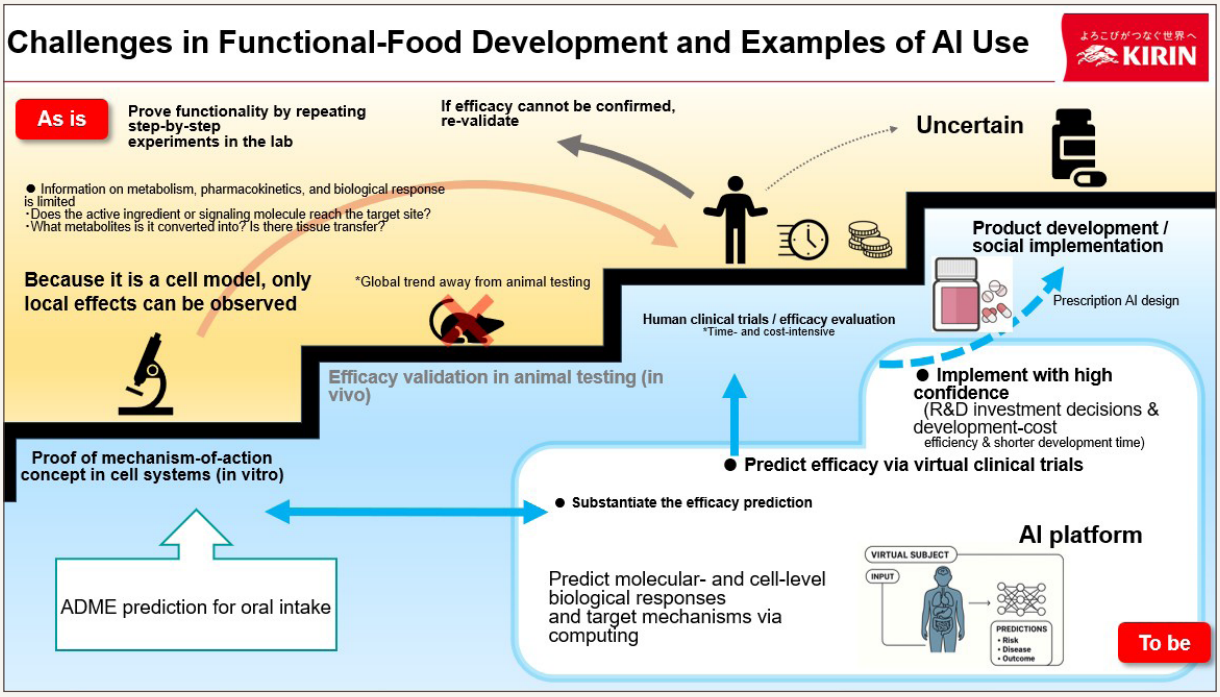
Building on its fermentation and biotechnology platform, Kirin Holdings (hereinafter “Kirin”) is strengthening its Health Science business centered on proprietary functional food components.

In the R&D of functional food components, improving the success rate of clinical trials is a key challenge, and Kirin is advancing efforts to apply AI-based efficacy prediction prior to clinical trials. The critical issue lies in the reliability of AI-generated efficacy predictions as a basis for go/no-go decisions on clinical trial initiation. At present, no framework exists for making such decisions based unconditionally on AI outputs. The underlying challenges are clearly identified as Challenges.

A further complexity arises from the intrinsic properties of functional food components: their physiological effects tend to be broad and moderate, their mechanisms of action are multifactorial, and inter-individual variability is considerable. Consequently, the required level of predictive accuracy is high, and the cost of model validation can be substantial.

### Challenges in R&D practice

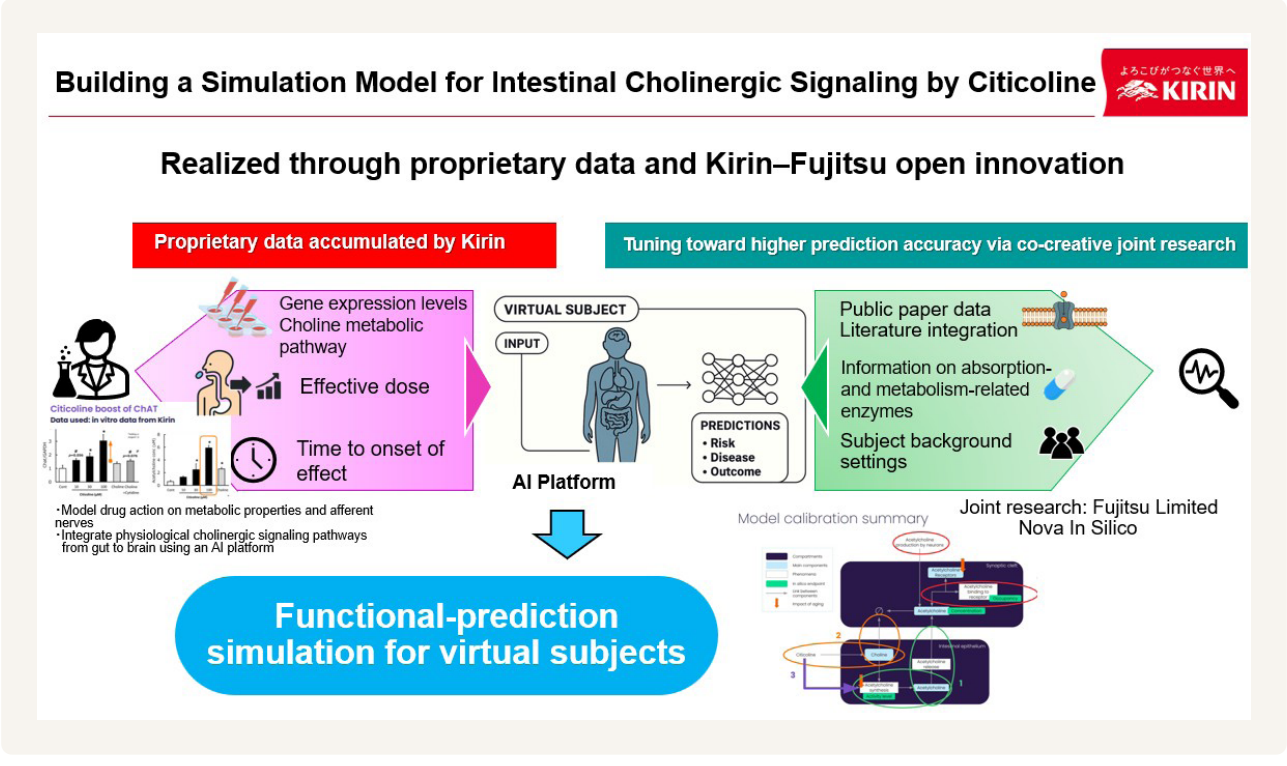
- Insufficient data for model development
- Significant burden of data curation and cleansing due to difficulties in data integration/ preparation
- No established criteria for determining the appropriate level of confidence in AI-generated outputs
- No systematic development scheme for translating predictive outputs into follow-up study / investment decisions.

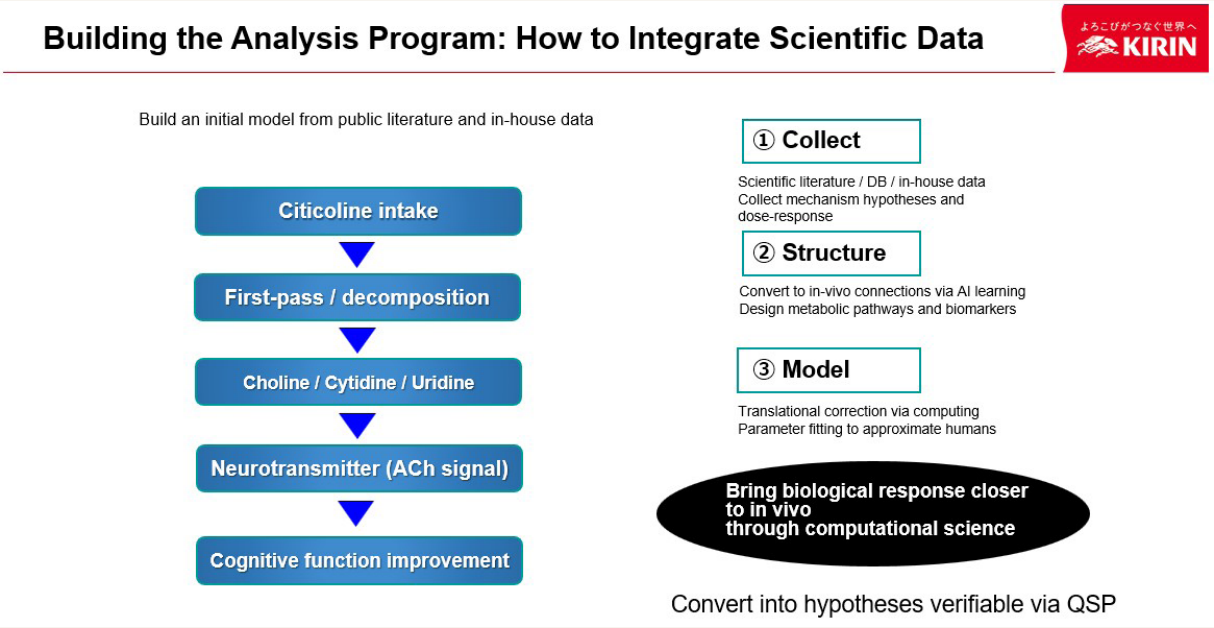


# Use case: Building a specific simulation model collaborated with Fujitsu

Kirin recognizes that the value of AI extends beyond quantitative gains in operational efficiency to qualitative advancements in R&D investment decision-making and development cost-effectiveness. Accordingly, improving the reliability of AI-driven predictions is identified as a critical priority.

As a concrete initiative, Kirin is collaborating with Fujitsu to elucidate the human physiological effects of citicoline — a proprietary functional food component — using a mechanistic modeling framework grounded in Quantitative Systems Pharmacology (QSP). Building on Kirin's proprietary in-house datasets, the approach integrates external data sources including published scientific literature into a QSP model, followed by translational scaling and parameter estimation against experimental data, with the aim of achieving the predictive accuracy required to inform R&D investment decisions. A distinguishing feature of this initiative is its open innovation-based collaboration between Kirin and Fujitsu, through which iterative model refinement and scalable deployment in real-world operational settings are being actively pursued.






# Conclusion

The collaborative initiative between Kirin and Fujitsu demonstrates the potential of AI to contribute to the development of functional food components through enhanced efficacy prediction accuracy, accelerated development timelines and reduced R&D costs. By incorporating AI into the decision-making process in an explainable manner — enabling researchers to interrogate the reasoning underlying model outputs — it becomes possible to reduce uncertainty in R&D and improve the quality of both investment decisions and experimental design.

At the same time, since AI is ultimately a tool, the extent to which decision-makers place trust in AI-generated outputs must be explicitly defined when translating predictions into actionable decisions. Moving forward, the key to a robust decision-making framework that advances R&D lies in combining a scientifically rigorous, evidence-based data infrastructure with an iterative operational design that cyclically integrates prediction, experimental validation, and model refinement.

## People in this project:


**Koichiro Murashima, Ph.D.**
Executive Officer General Manager,
Institute of Health Sciences
Kirin Holdings Company, Limited

**Masahiko Morita, Ph.D.**
Group Leader, Neuroscience — Gut health section
Institute of Health Sciences
Kirin Holdings Company, Limited

**Masato Kitajima, Ph.D.**
Manager, Healthy Living Division,
Cross-Industry Solutions Business Unit
Fujitsu Limited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