

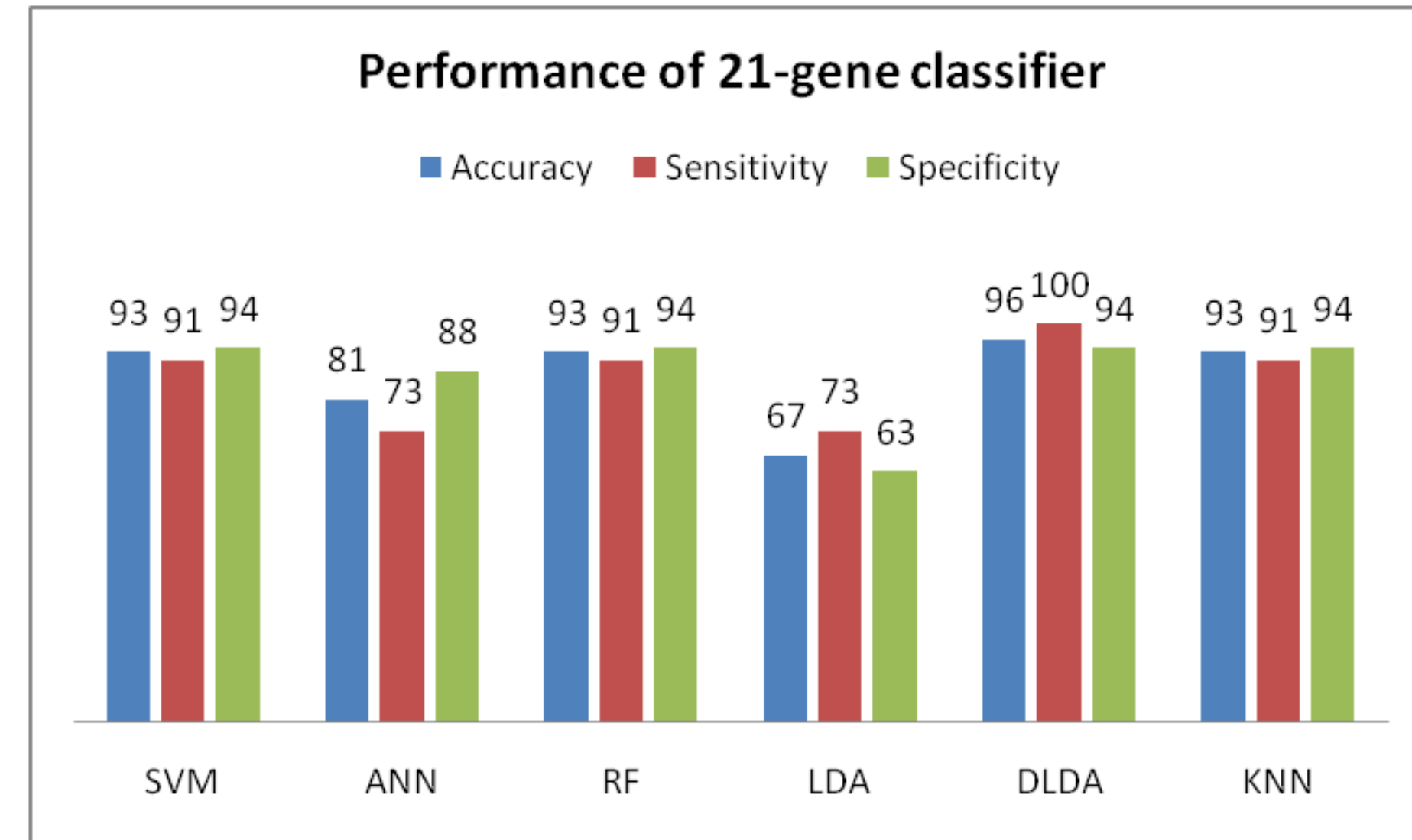
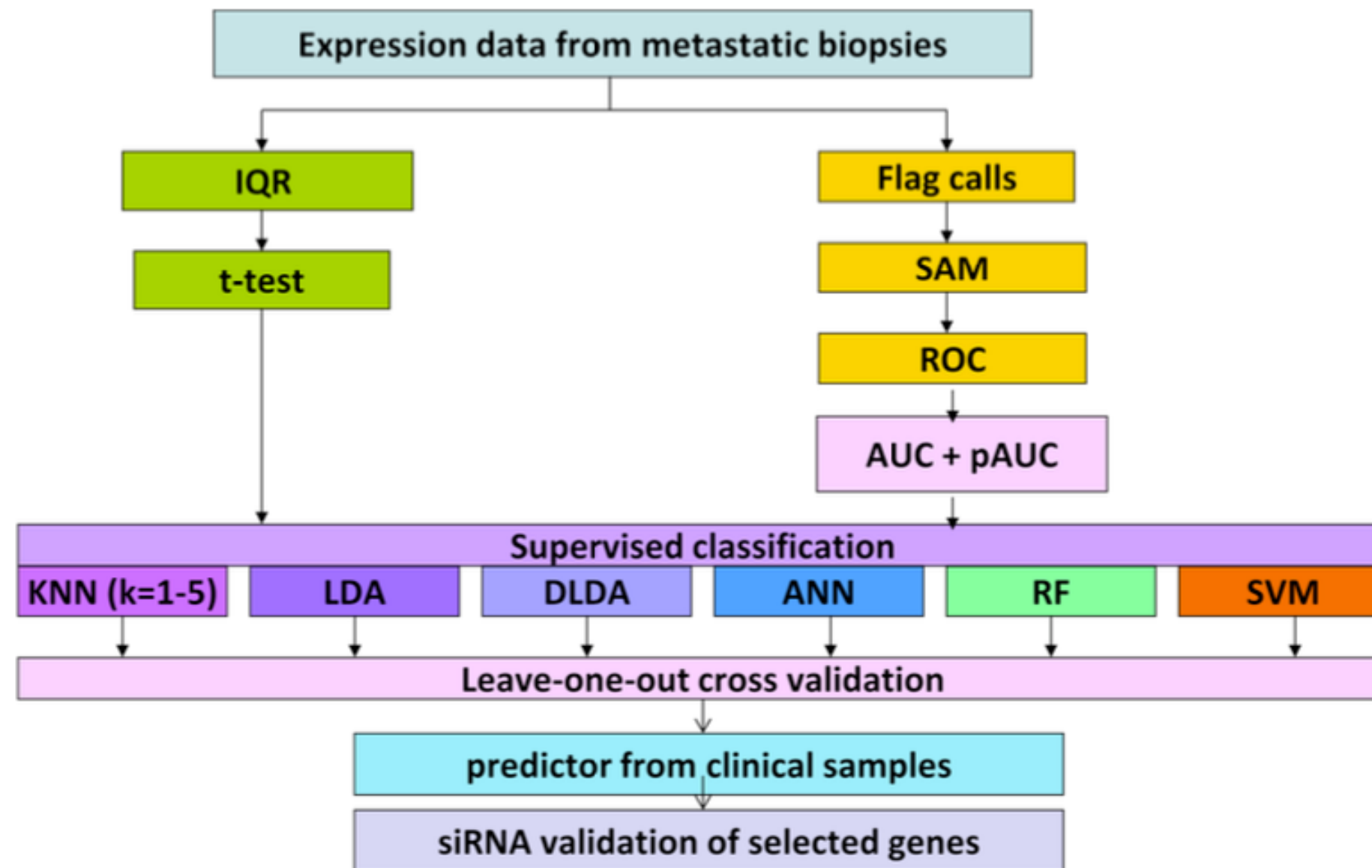
Harnessing AI for Precision Medicine's Next Leap

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World Summit AI 2024

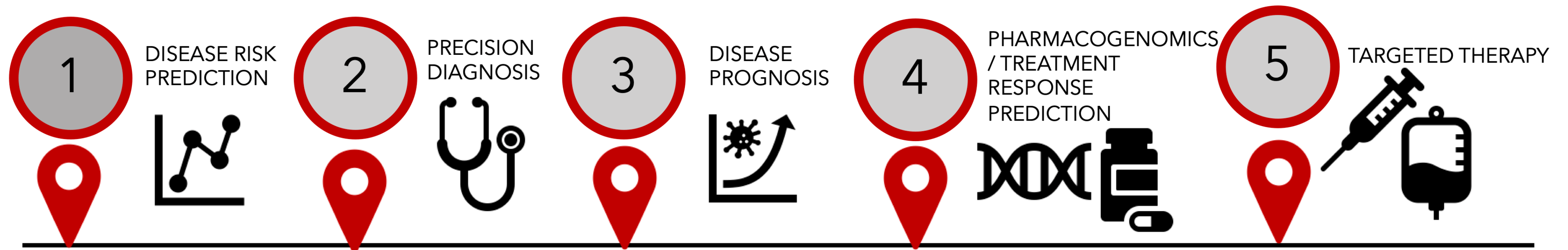
Predicting response to therapy

Gene expression signatures using machine learning



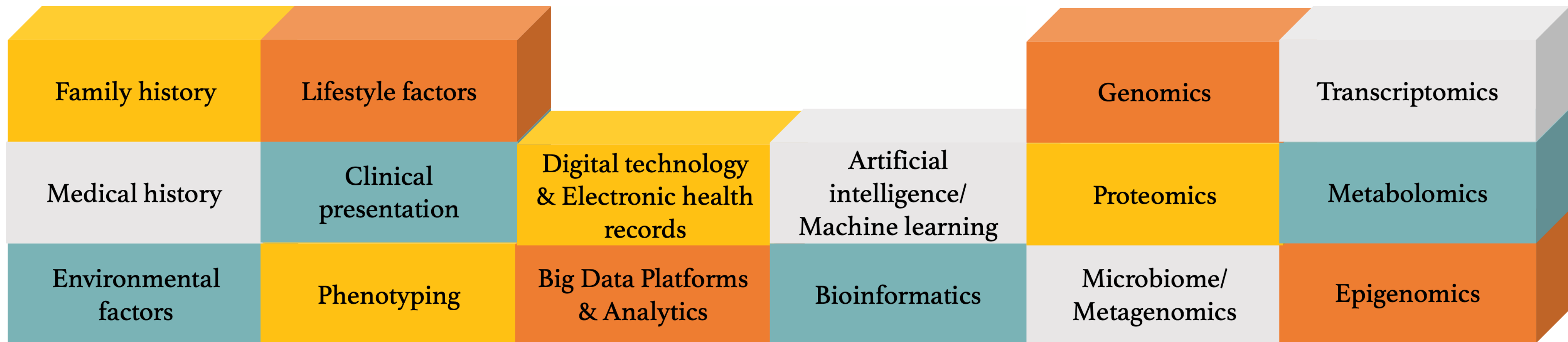
Precision Medicine

- Early detection of individuals at risk of developing diseases, for improving preventive measures
- Enabling precise diagnosis of patients, with the aim of providing appropriate therapy
- Predicting the prognosis and treatment response, to enhance efficacy and reduce adverse effects of treatment
- Development of novel therapeutics



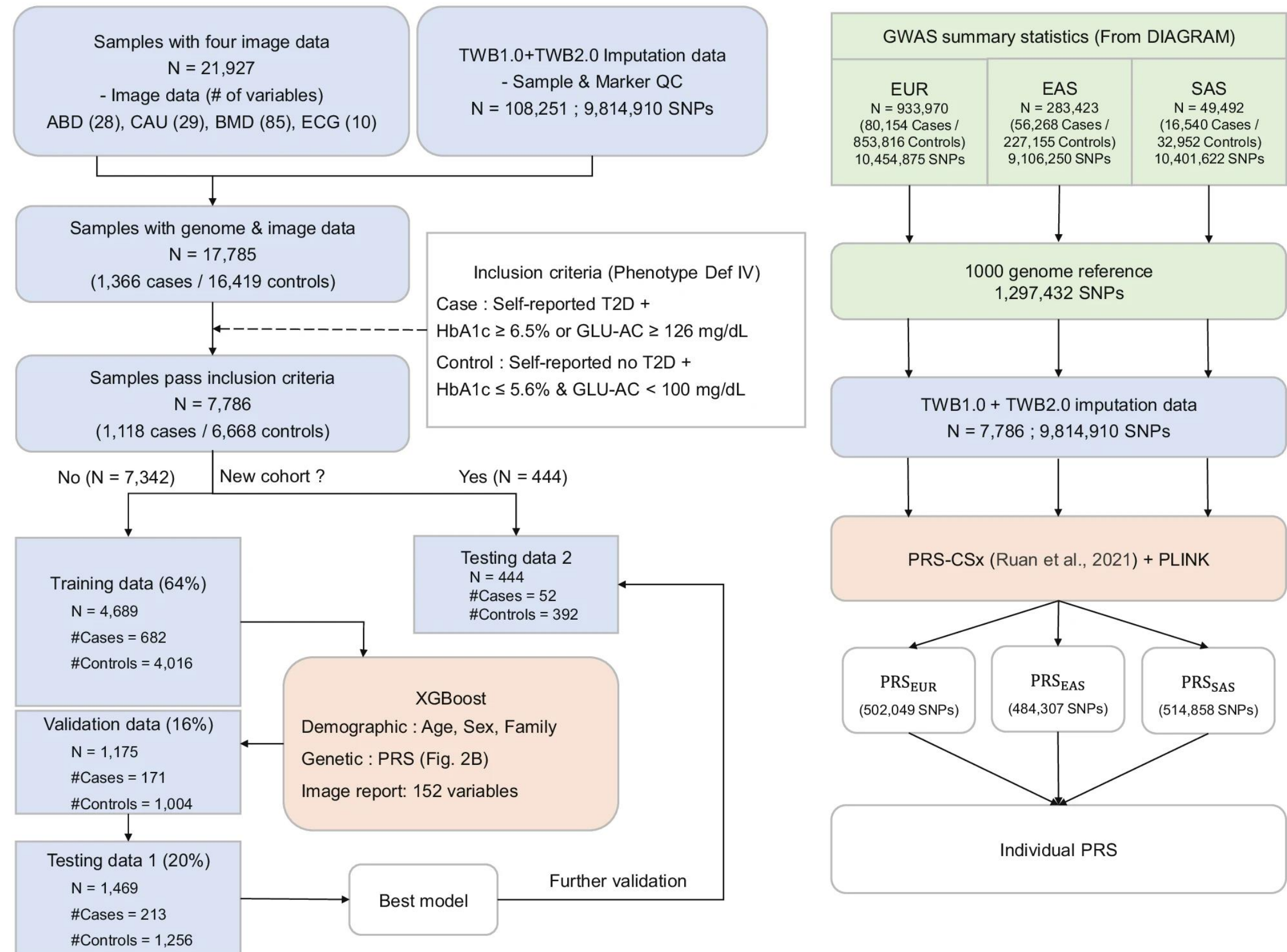
Precision Medicine

The precise characterization of health states, disease states, and therapeutic options for affected individuals using multi-omics, imaging and phenotypic data, combined with medical history, social/behavioral determinants, and the environmental knowledge



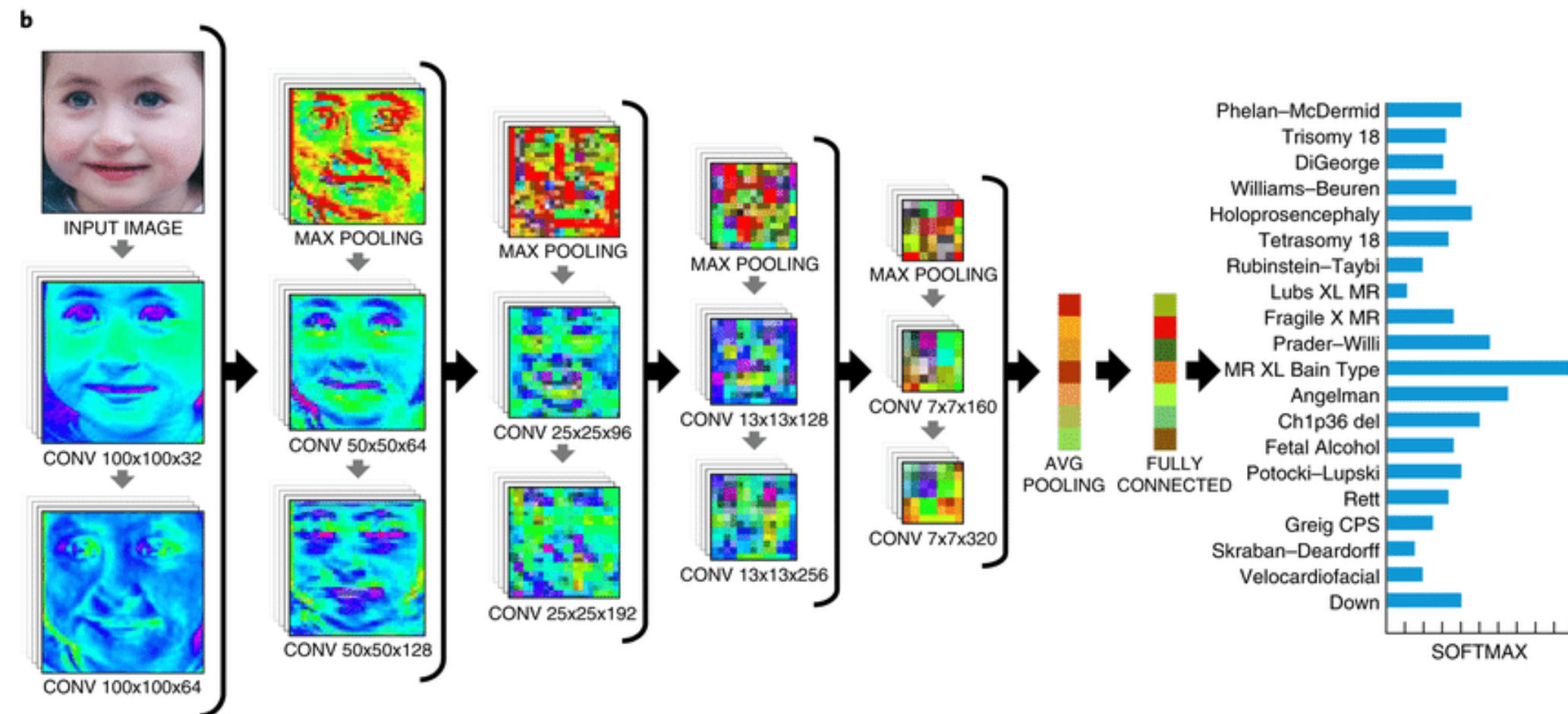
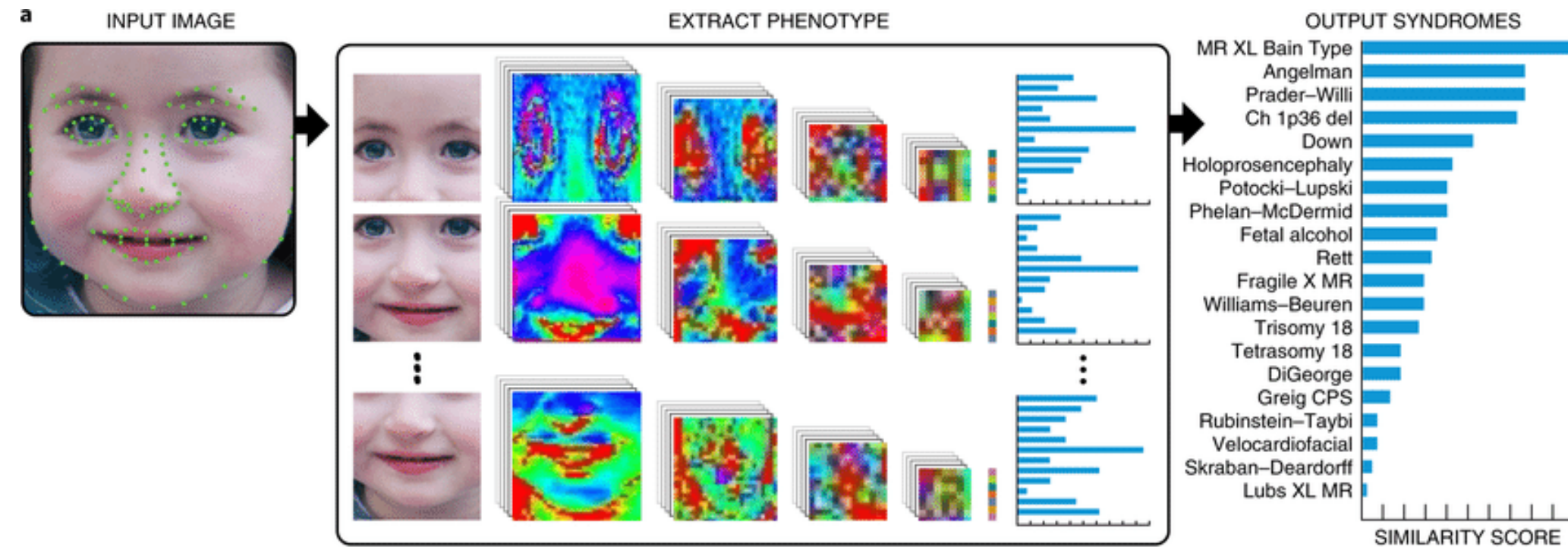
Disease Risk Prediction

AI-based integration of genetic and medical imaging data for risk assessment of Type 2 Diabetes



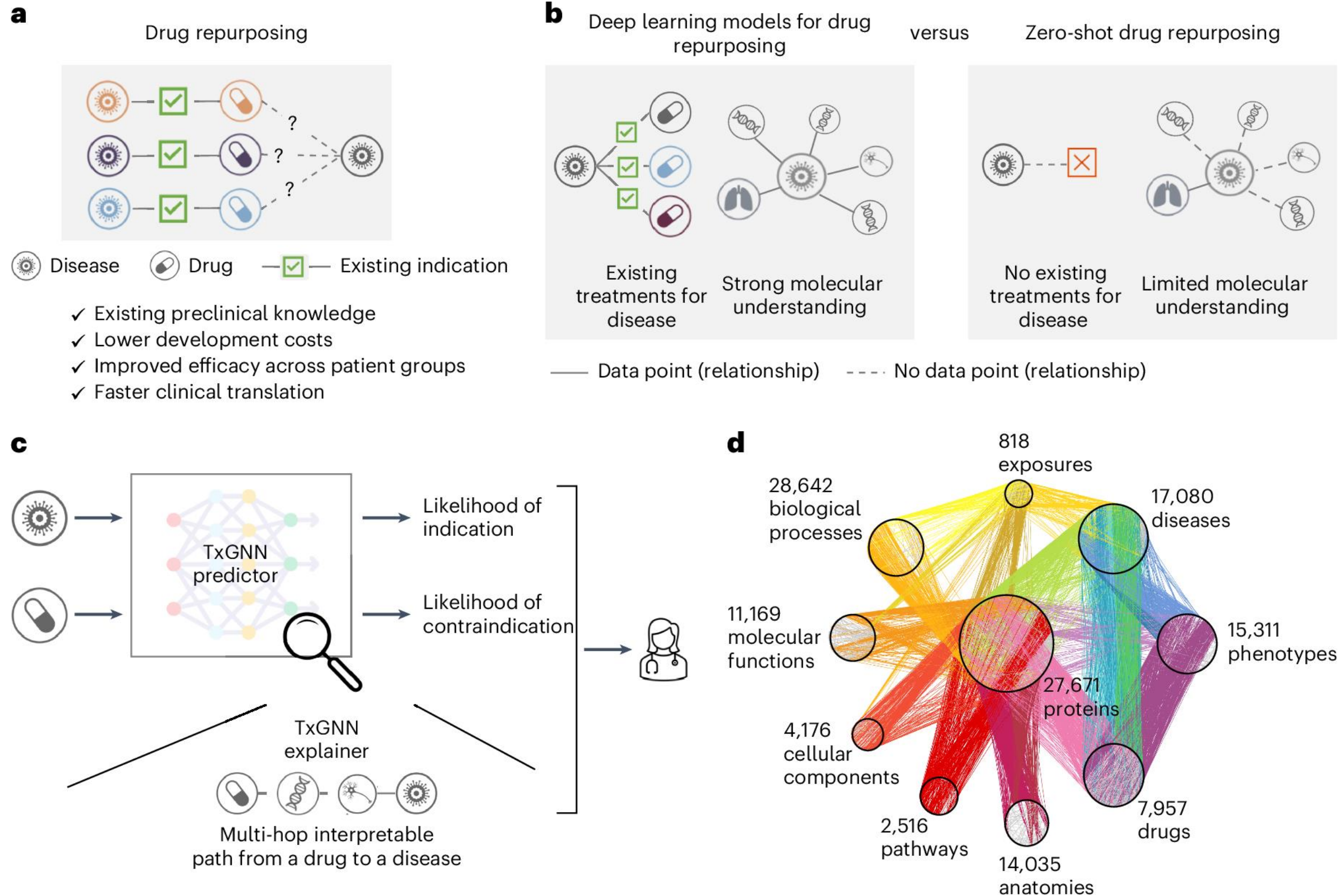
Precision Diagnosis

Identifying facial phenotypes of genetic disorders using deep learning: DeepGestalt



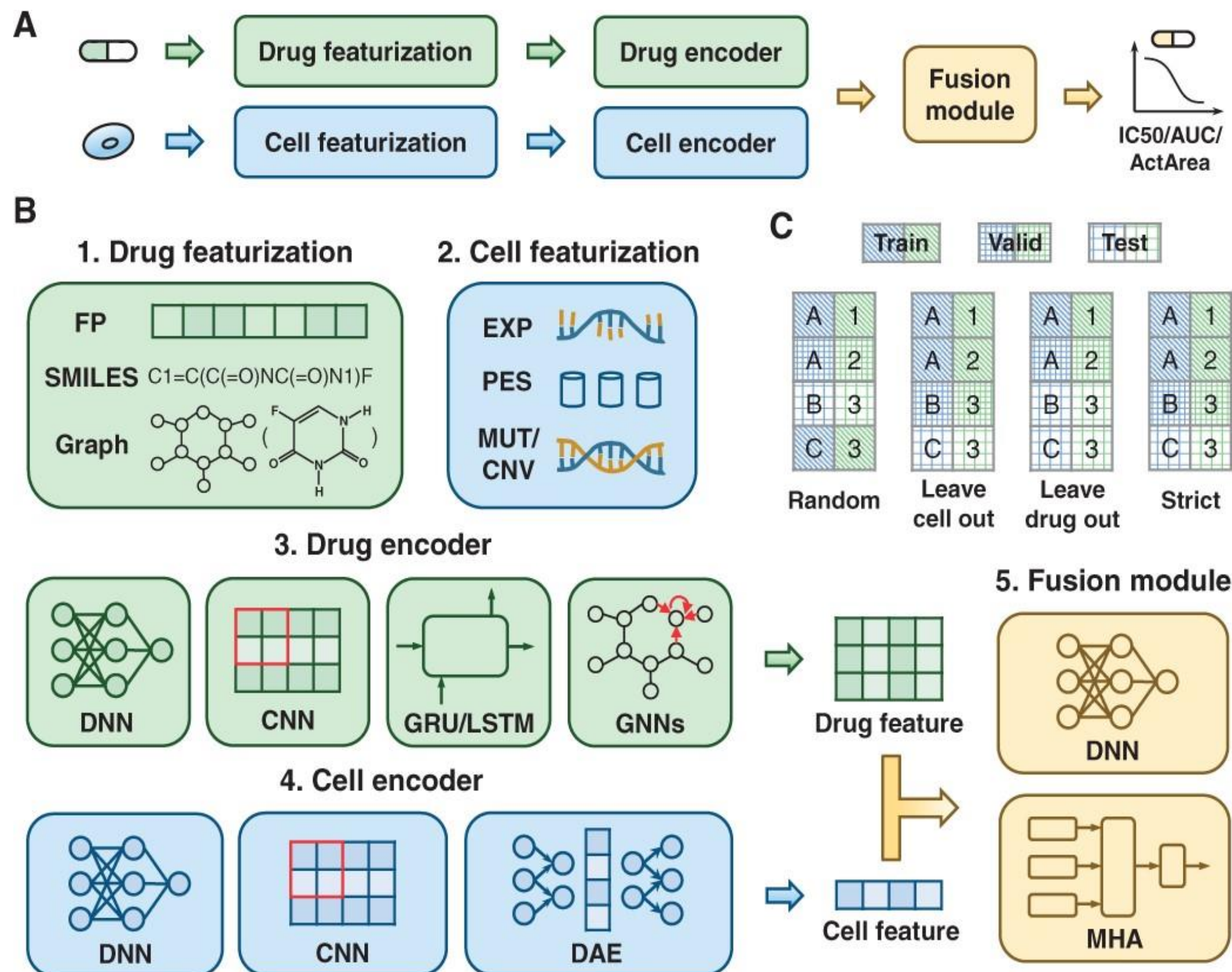
Drug Repurposing

A foundation model for drug repurposing: TxGNN



Drug Response Prediction

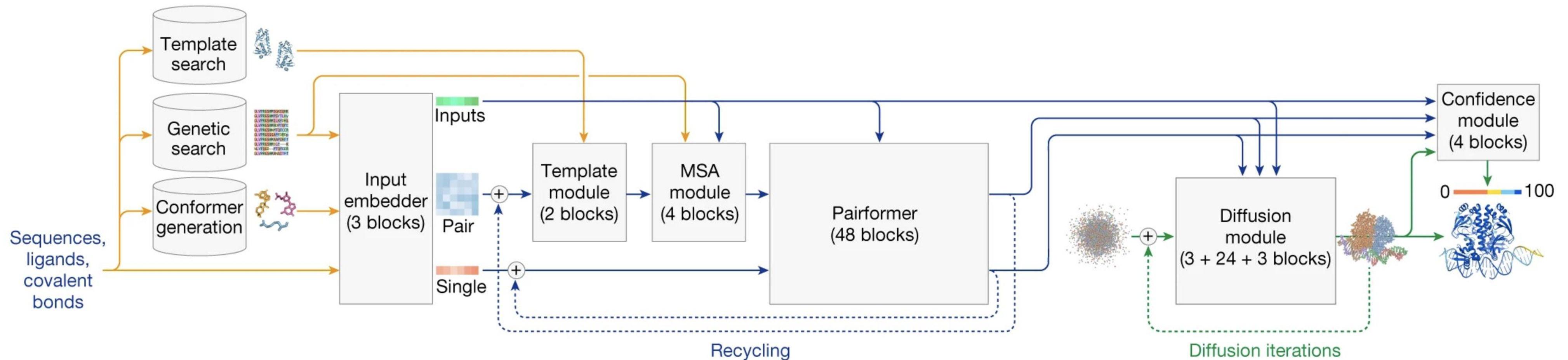
A deep learning library for drug response prediction: DeepDR



Drug Discovery & Design

GenAI can create novel protein sequences with specific properties for designing antibodies, enzymes, vaccines, and gene therapy

AlphaFold 3: Accurate structure prediction of biomolecular interactions



Synthetic Data

GenAI can create synthetic patient and healthcare data

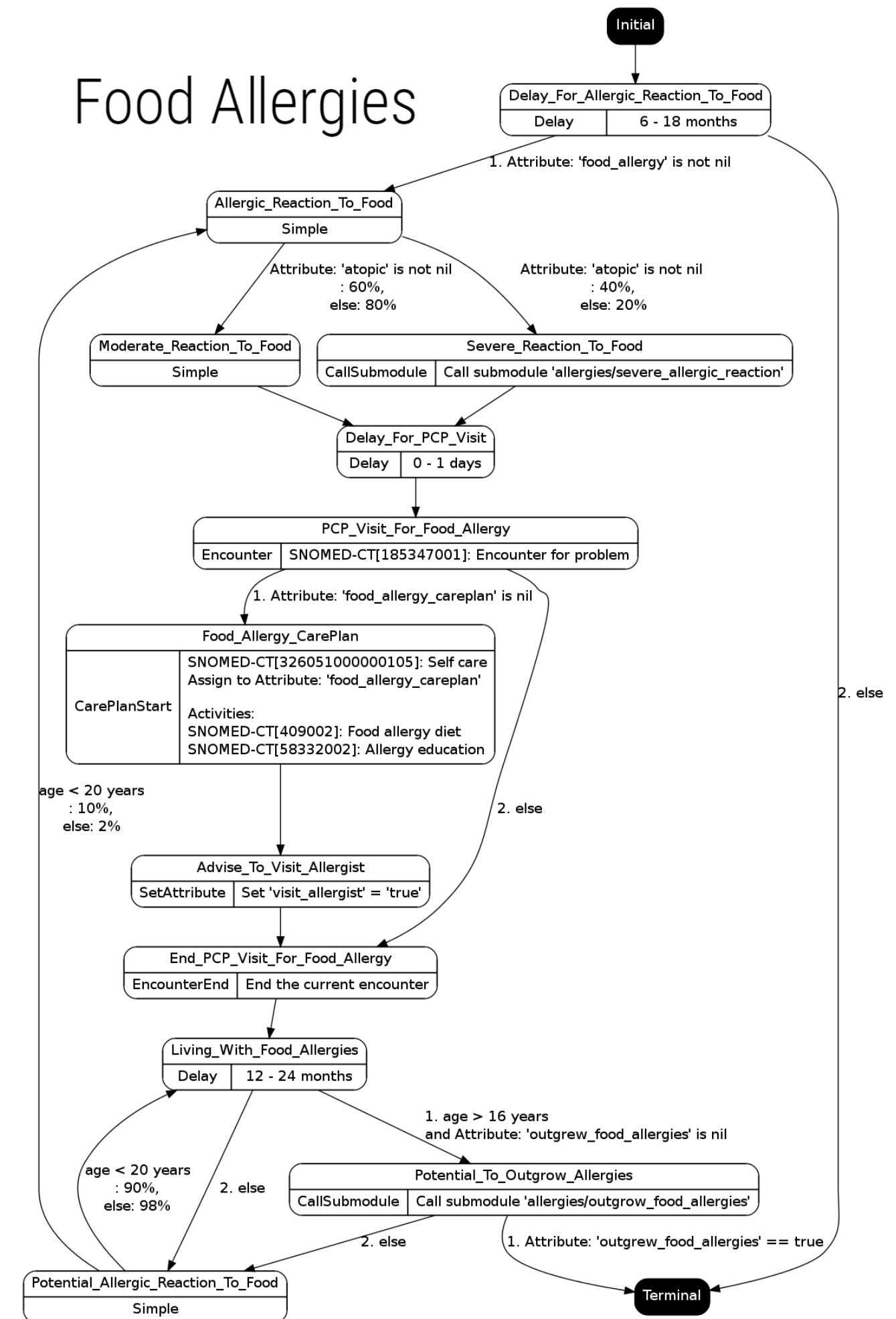
Useful for training AI models, simulating clinical trials, or studying rare diseases without access to large real-world datasets



Synthetic Patient Generation

An open-source, synthetic patient generator that models the medical history of synthetic patients

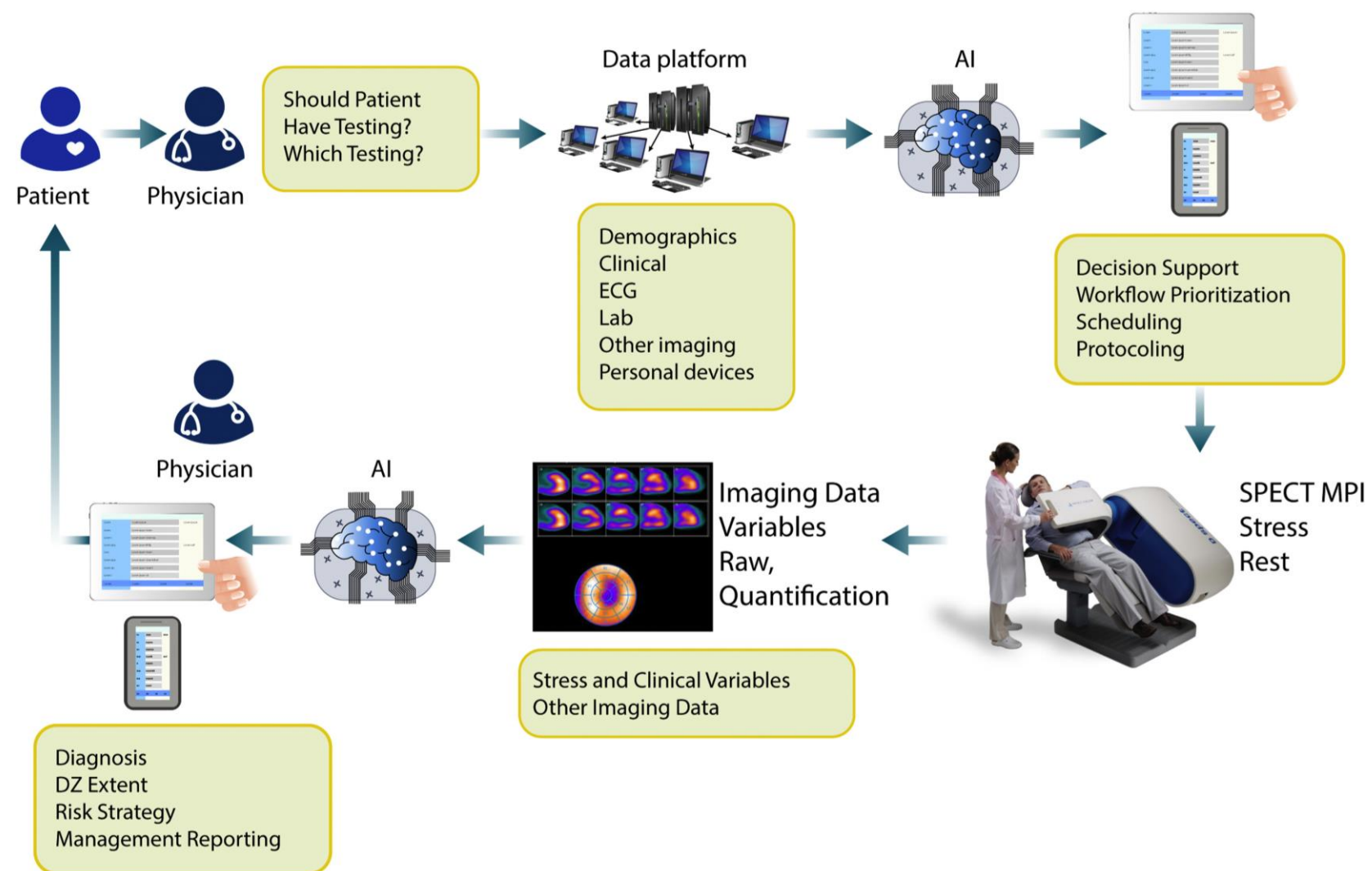
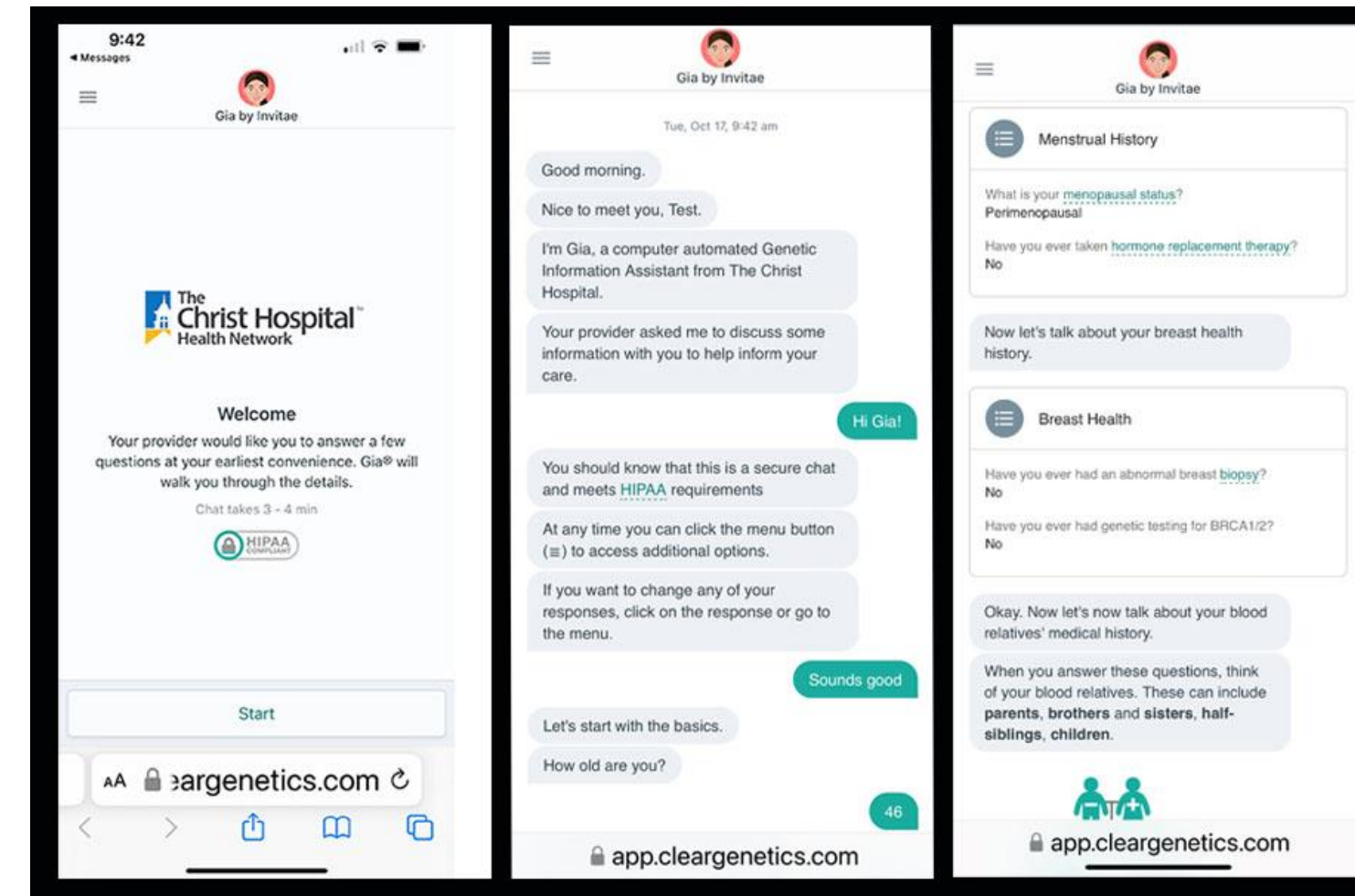
Food Allergies



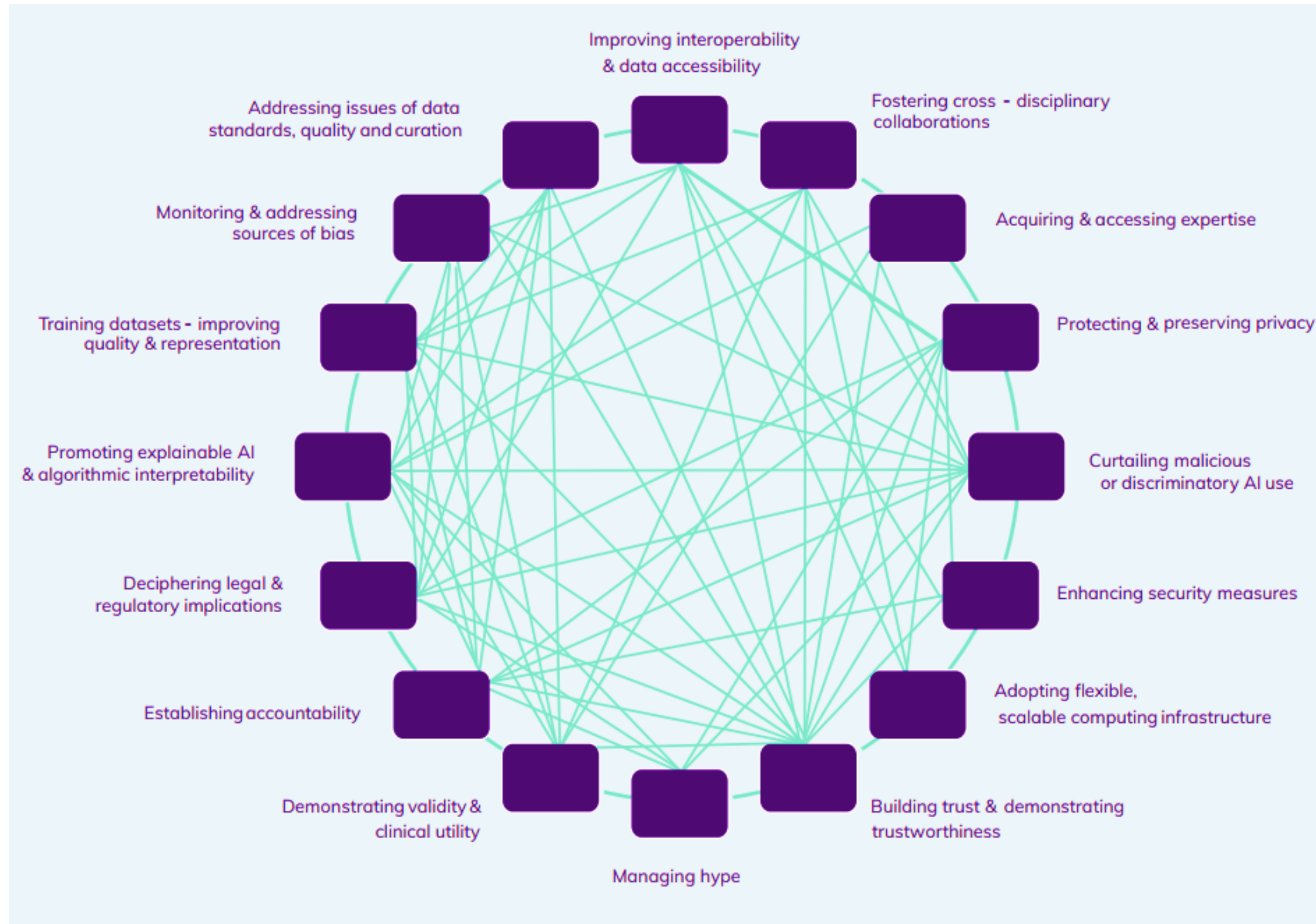
Patient Care Personalization

Chatbots using GenAI can provide responses based on a single interaction. A person makes a query and the chatbot uses natural language processing to reply

Agentic AI uses sophisticated reasoning and iterative planning to autonomously solve complex, multi-step problems



Harnessing AI for Precision Medicine: Challenges



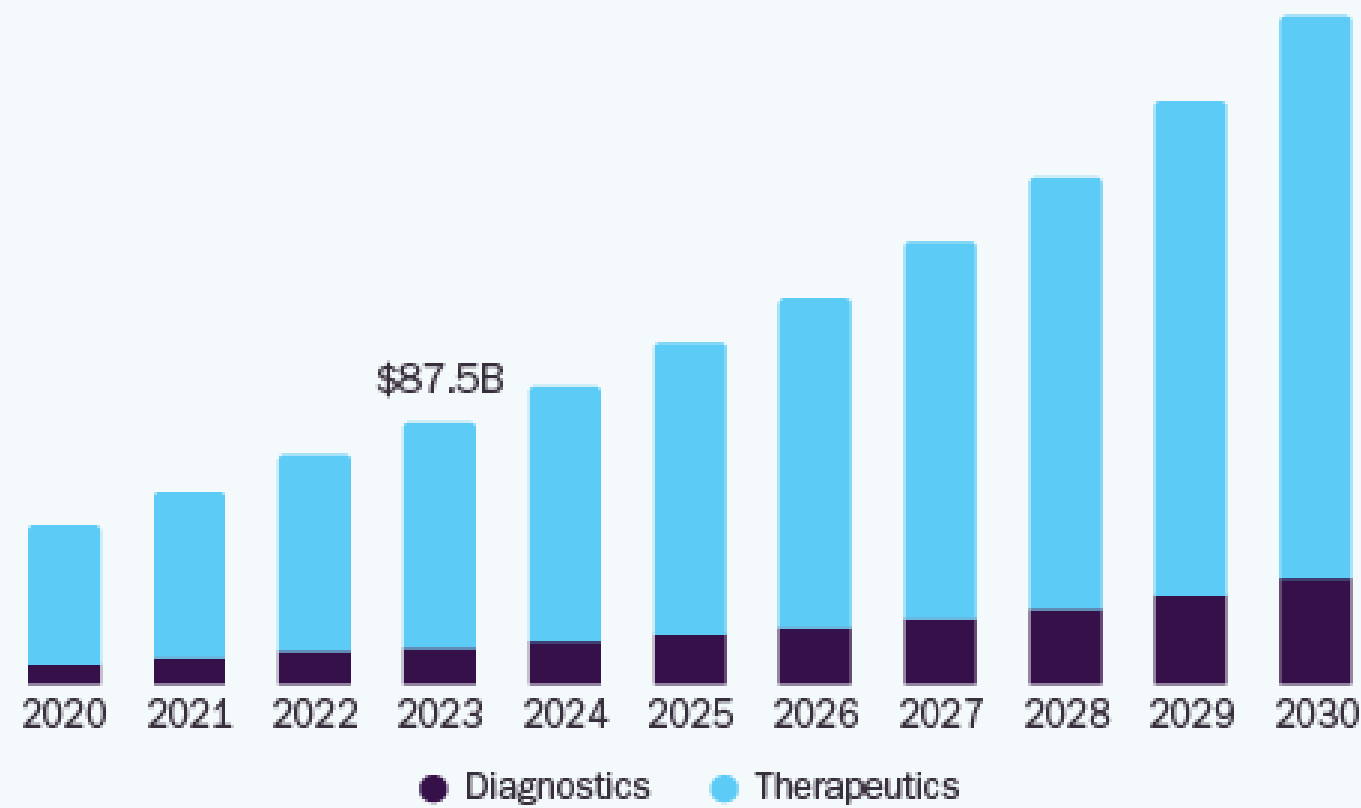
Interconnectivity between the various issues that will need to be addressed in order to advance the benefits of AI for precision medicine



AI & Precision Medicine: Market outlook

Global Precision Medicine Market

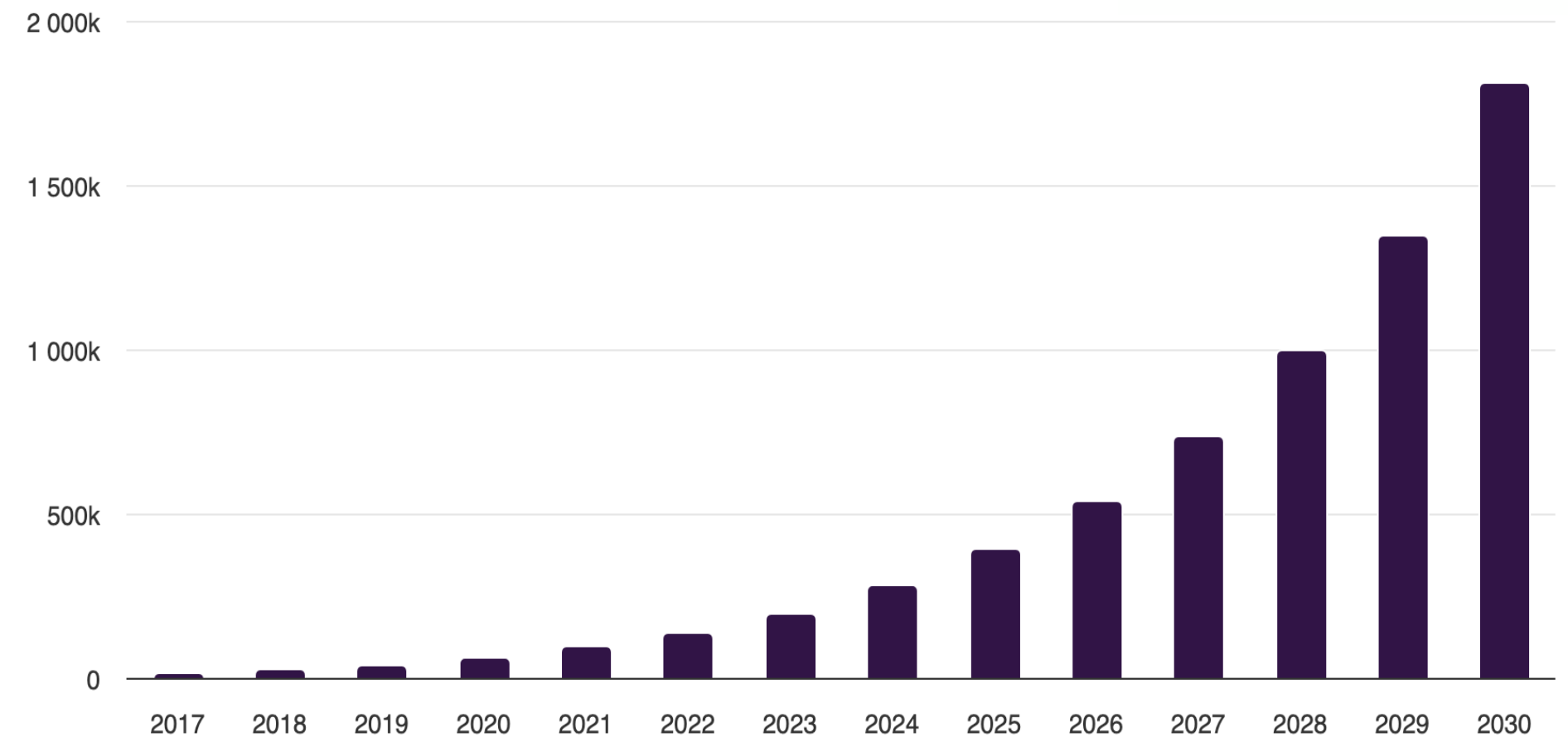
Size, by Application, 2020 - 2030 (USD Billion)



16.3%
Global Market CAGR,
2024 - 2030

Source:
www.grandviewresearch.com

Global artificial intelligence market, 2017-2030 (US\$M)



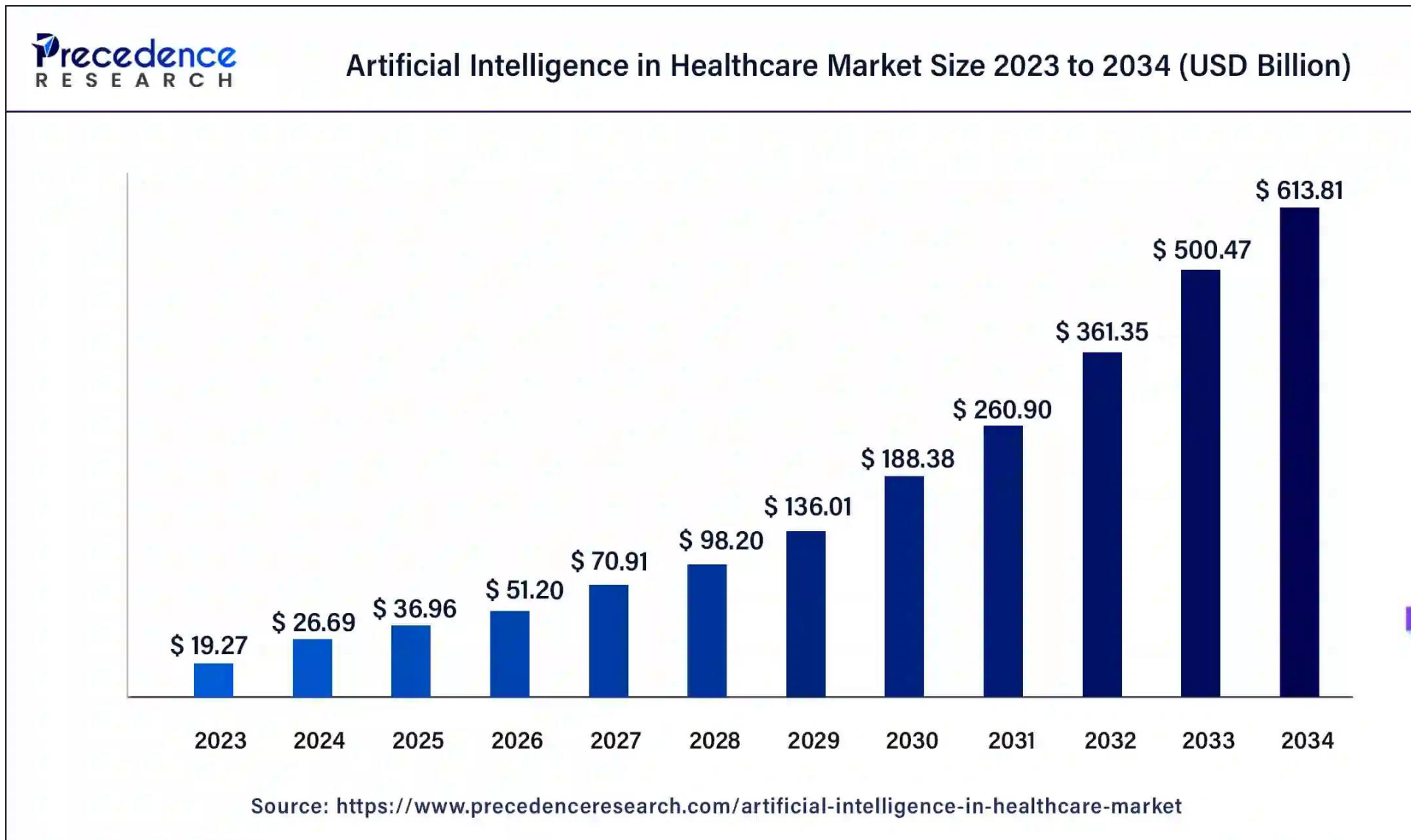
Revenue, 2023 (US\$M)
\$196,633.9

Forecast, 2030 (US\$M)
\$1,811,747.3

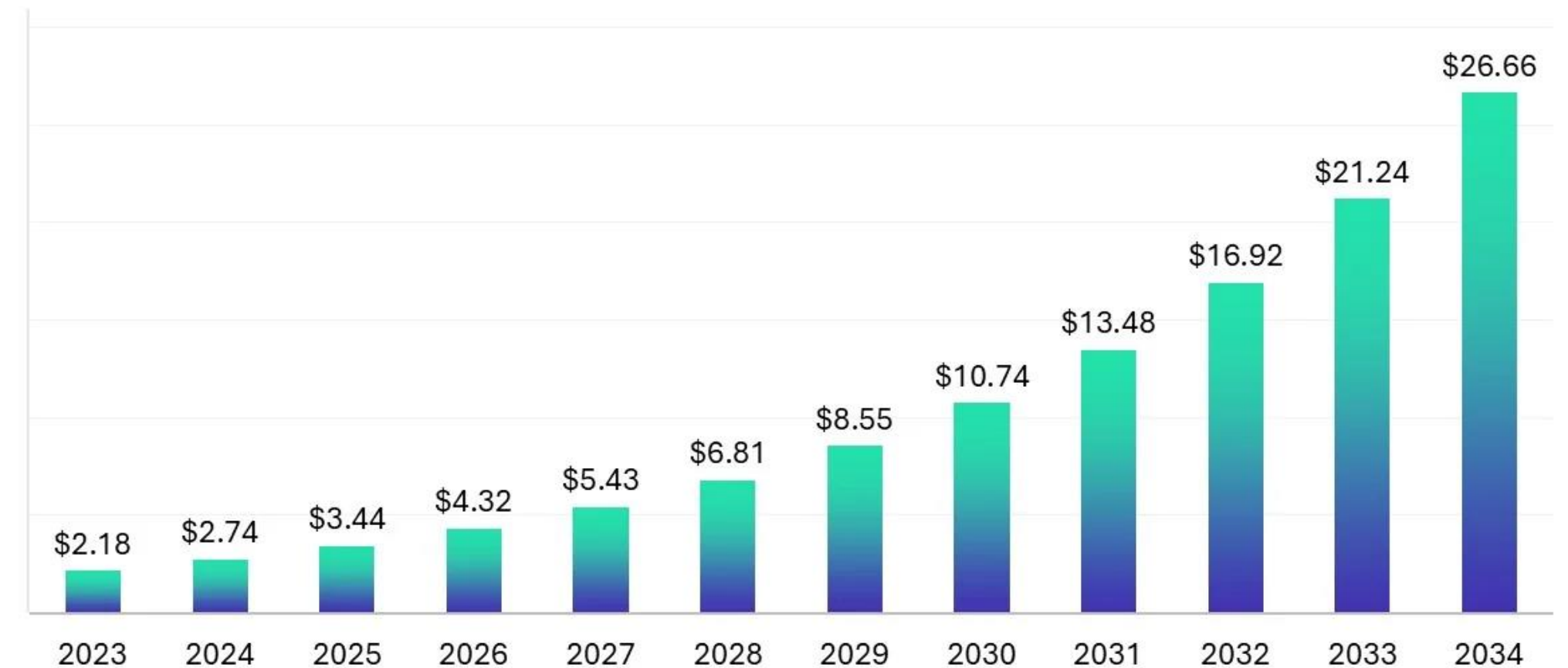
CAGR, 2024 - 2030
37.3%



AI & Precision Medicine: Market outlook



AI in Precision Medicine Market Size 2023 to 2034 (USD Billion)



Source: <https://www.towardshealthcare.com>

**“AI will not replace you.
A person using AI will.”**

