

EU Connect 2023

DH09



Human BioGeography: predicting clinical trials outcome using a 3D human body simulation with a GIS framework

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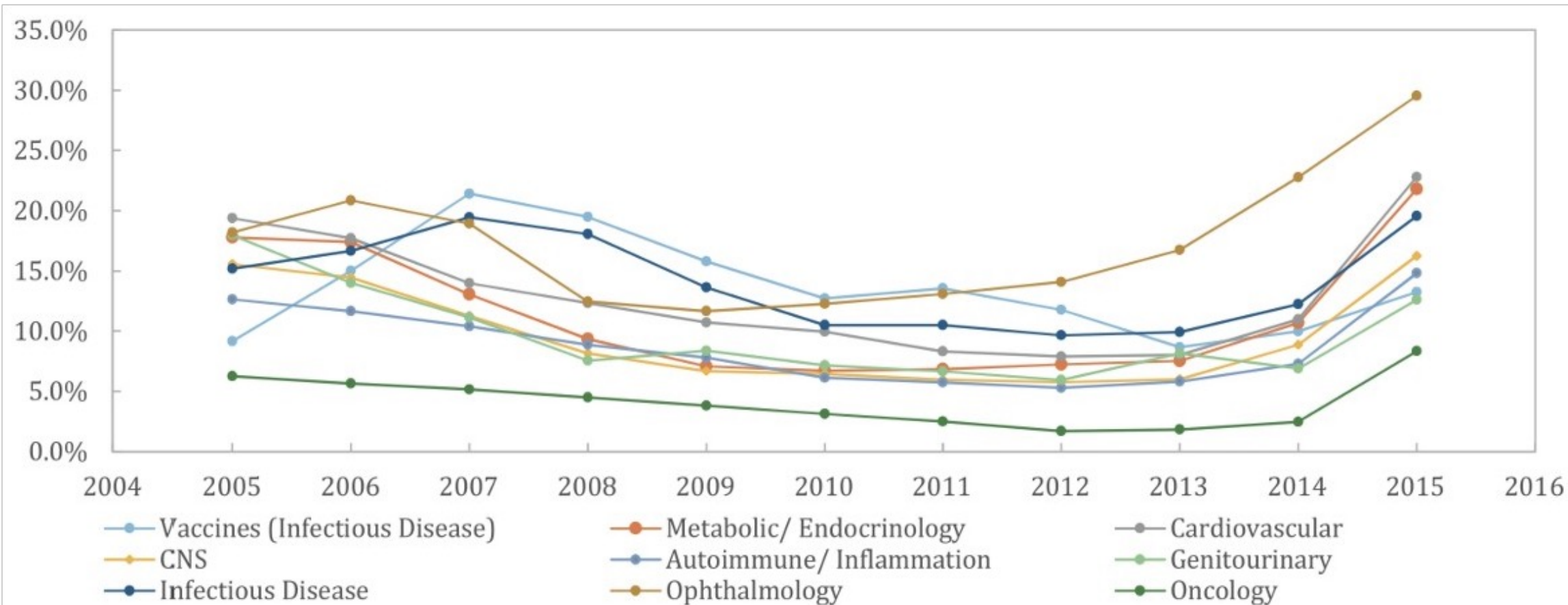
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Human BioGeography Open Source Tool

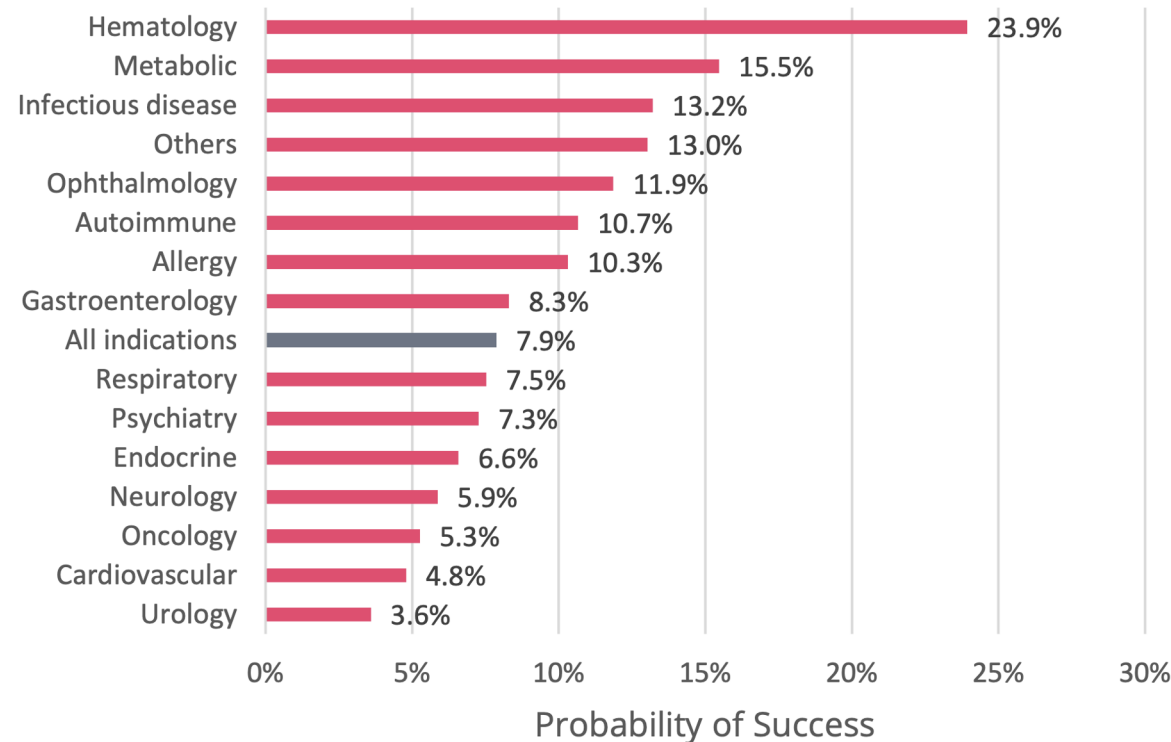
- Introduction
- Business Objectives
- Design Principles
- Data Standards Governor (DSG)
- Human BioGeographyTM
- Benefits
- Roadmap
- Summary and Conclusion

Evaluation of the clinical trials success during 2005-2015



406,038 of clinical trial data for over 21,143 compounds

Overall likelihood of approval by disease are from Phase I



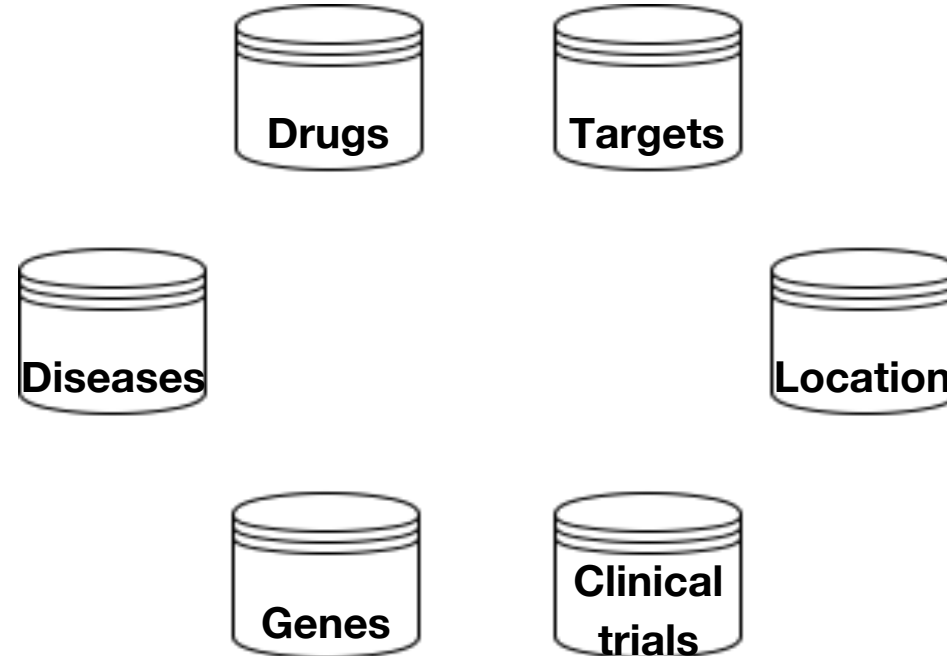
More effective strategies to speed the clinical progress

Open Data databases

**Successful and unsuccessful
clinical trials**



**Weak points of failure
Adverse events**



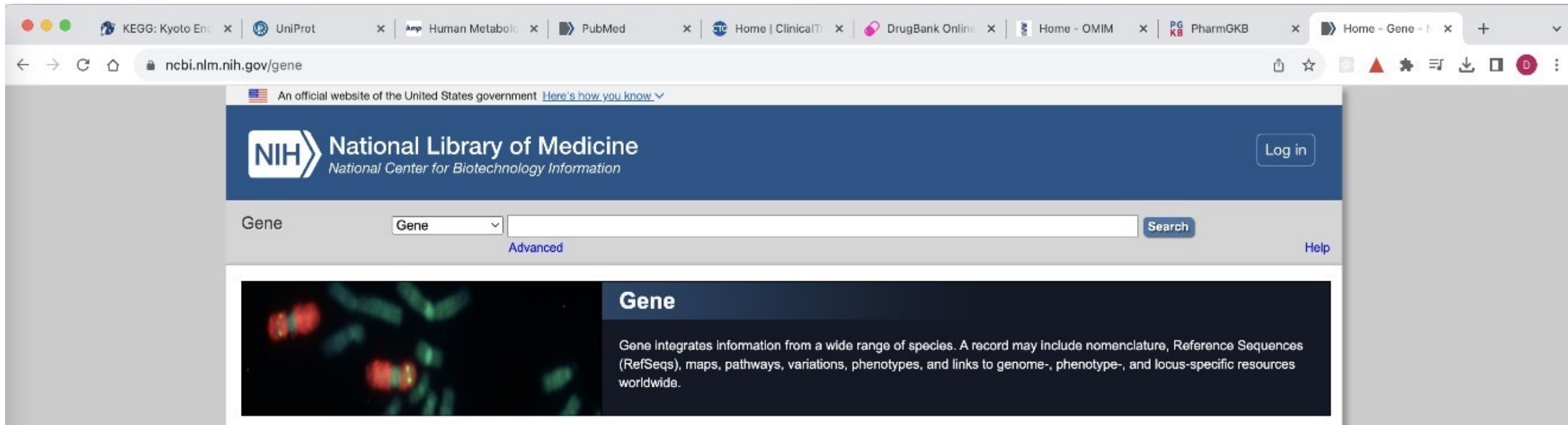
Spread out around different web tools

**OMICS and Bioinformatic
tools**



**Basis for developing
new targeted drugs**

Open Data databases



Inefficient and time-consuming search



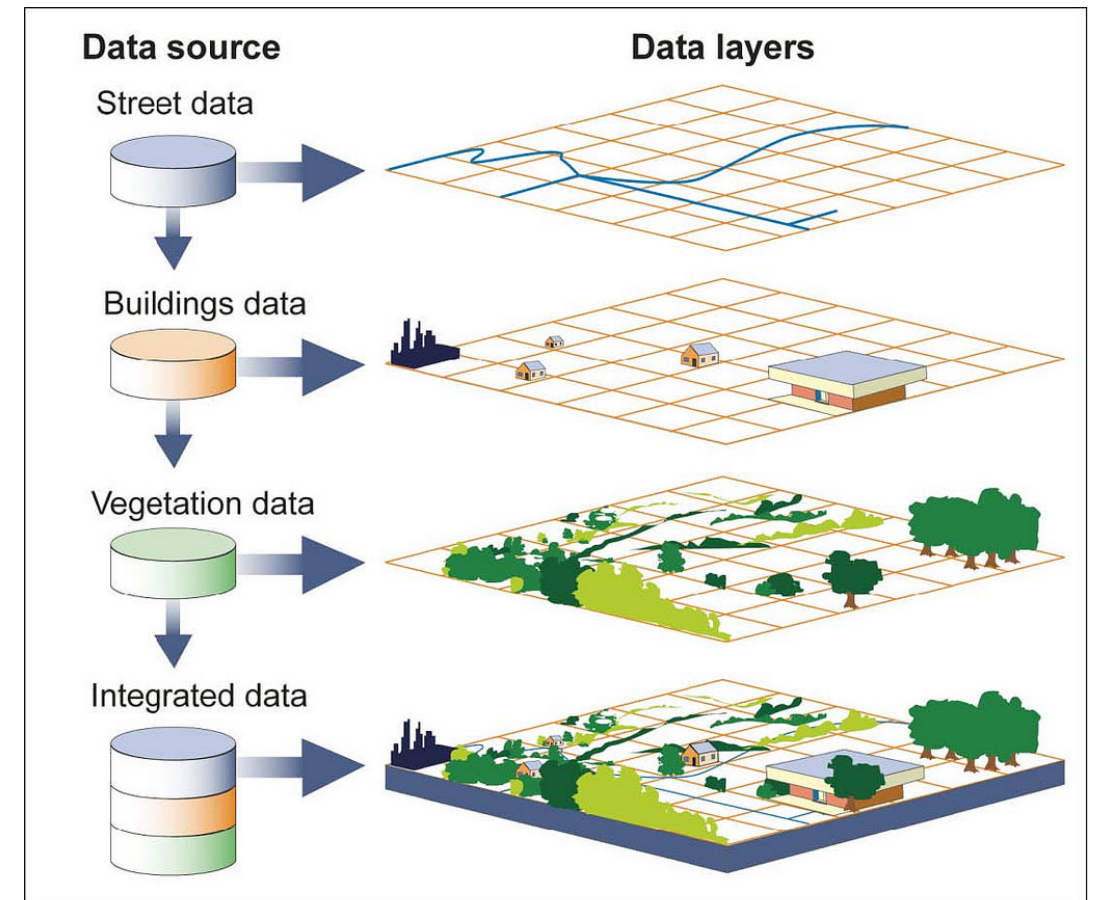
Needs integration and organization for comprehensive use

Geographic Information System (GIS)

Tool for spatial data analysis

**Spatial understanding of complex relationships
between various data points → Georeferences**

Google Maps



Source: GAO.

End-to-end Trial Design Tool

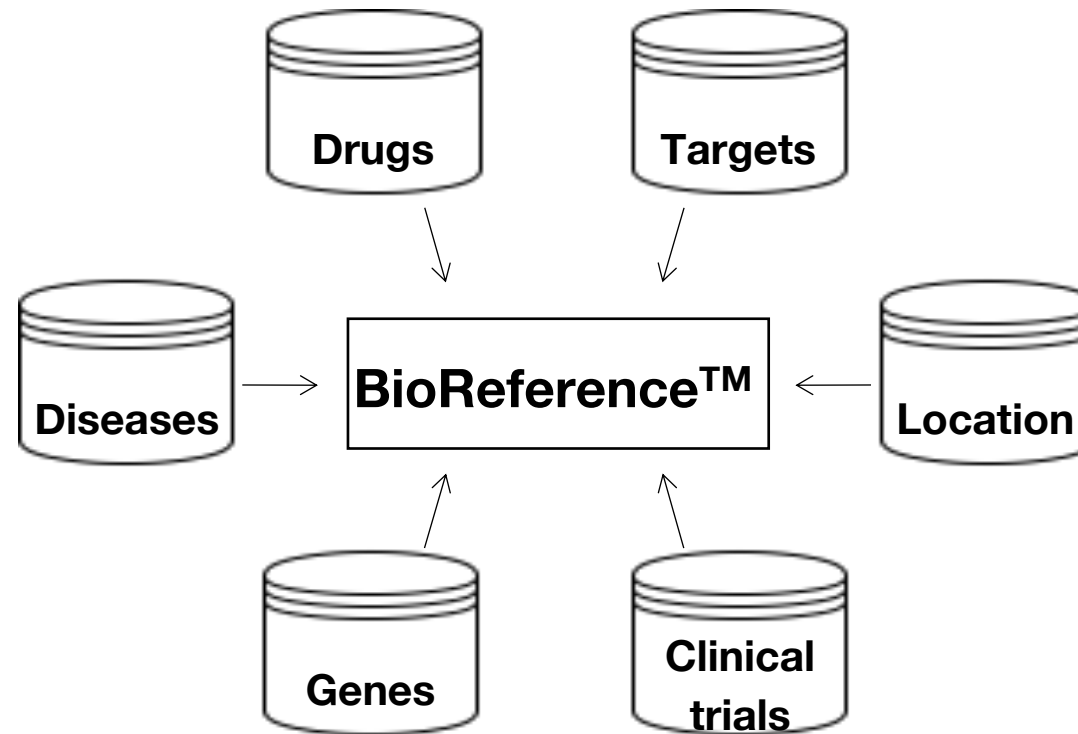
- Acquisition, aggregation, and combination of several Open Data databases in a 3D human body model
- Enhance the understanding and accessibility of the data
- Improve the search for the key aspects of clinical trial development
- Prediction of potential drugs and medical devices by the development of novel or reuse of existing ones



Increase the success rate of future clinical trials

BioReferencingTM

Open Data databases



Historical and real-time data

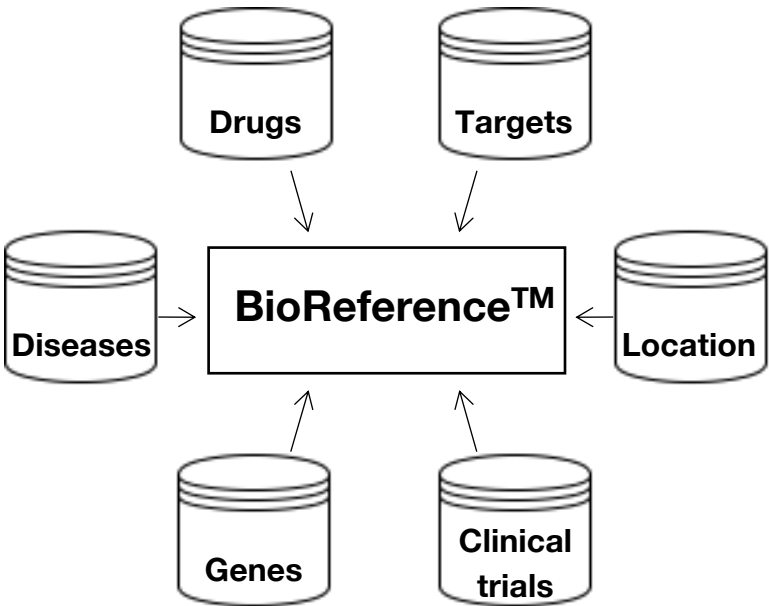
GIS

Georeferencing: links the map to real-world geographic coordinates
Geographical-like framework

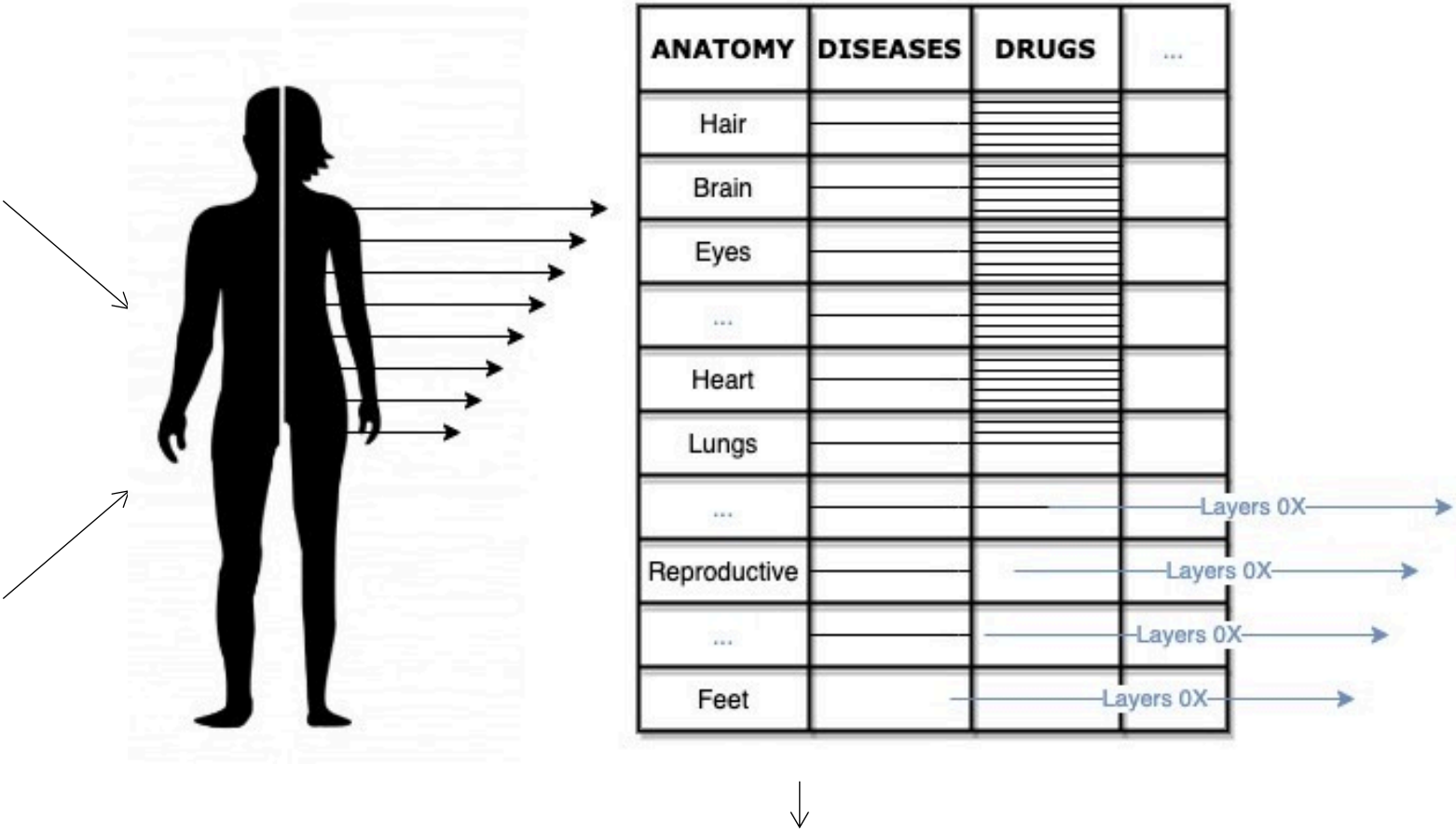
BioGeographical-like framework:
Spatial interconnection of biological and medical data points

↓
Complete depiction of relevant aspects of drug development

Open Data databases



Human BioGeography™



Biological Information System (BIS)



Drug and medical device development

User Benefits

- Get information from multiple sources simultaneously
- Perform complex queries and analysis
- Find data relationships and filter information

TrialTwin
Accelerating Clinical Trials

PHUSE

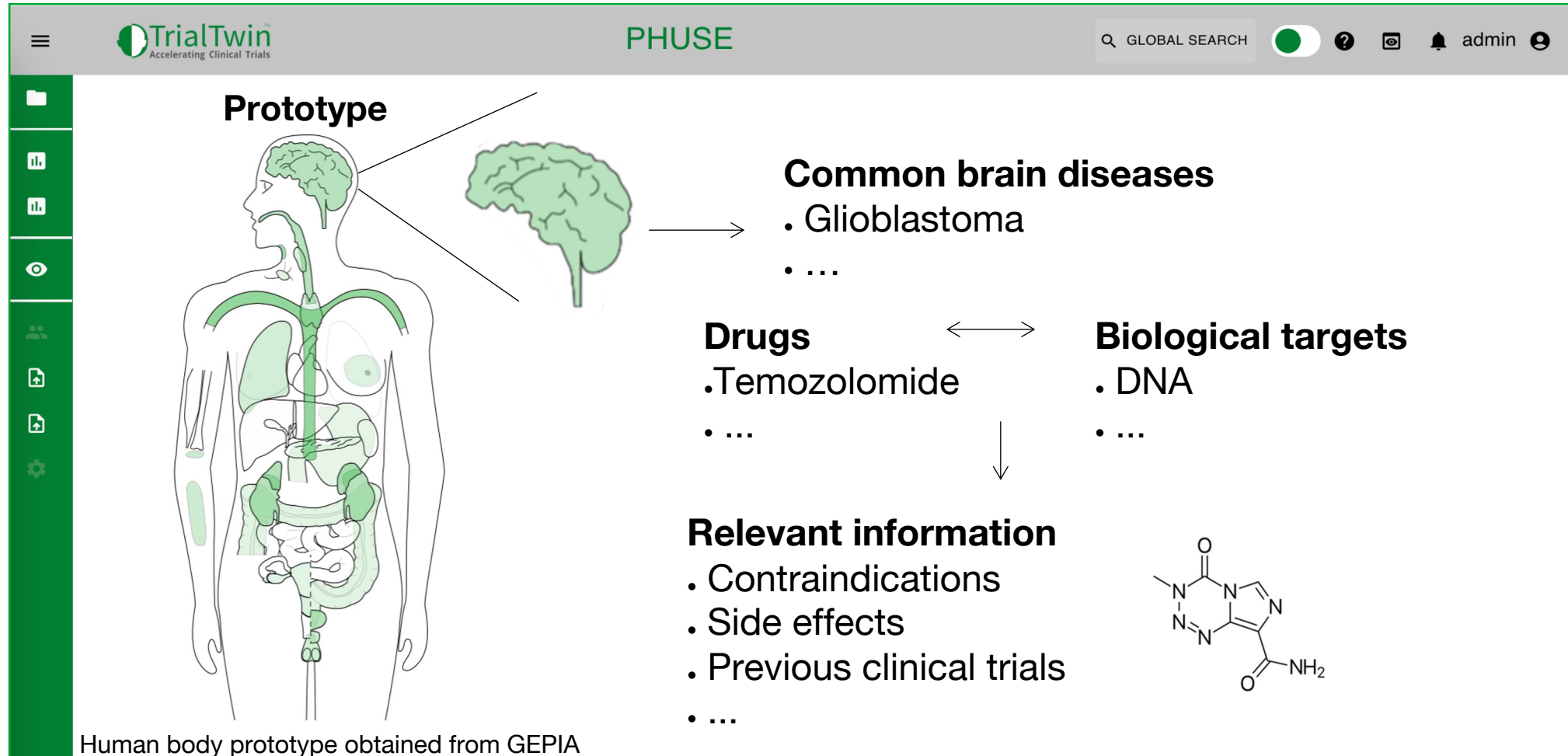
admin

Home / Collections / Databases

Databases

Actions		Collection
		Filter by Collection × Filter Mode: Fuzzy
	>	Anatomy
	>	Chemical Structure
	>	Disease
	>	Drug
	>	Target

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Purpose

Visualize body anatomy by navigating through different body layers
Easily find the most common diseases, targets, drugs, and chemical structures...

Predictions

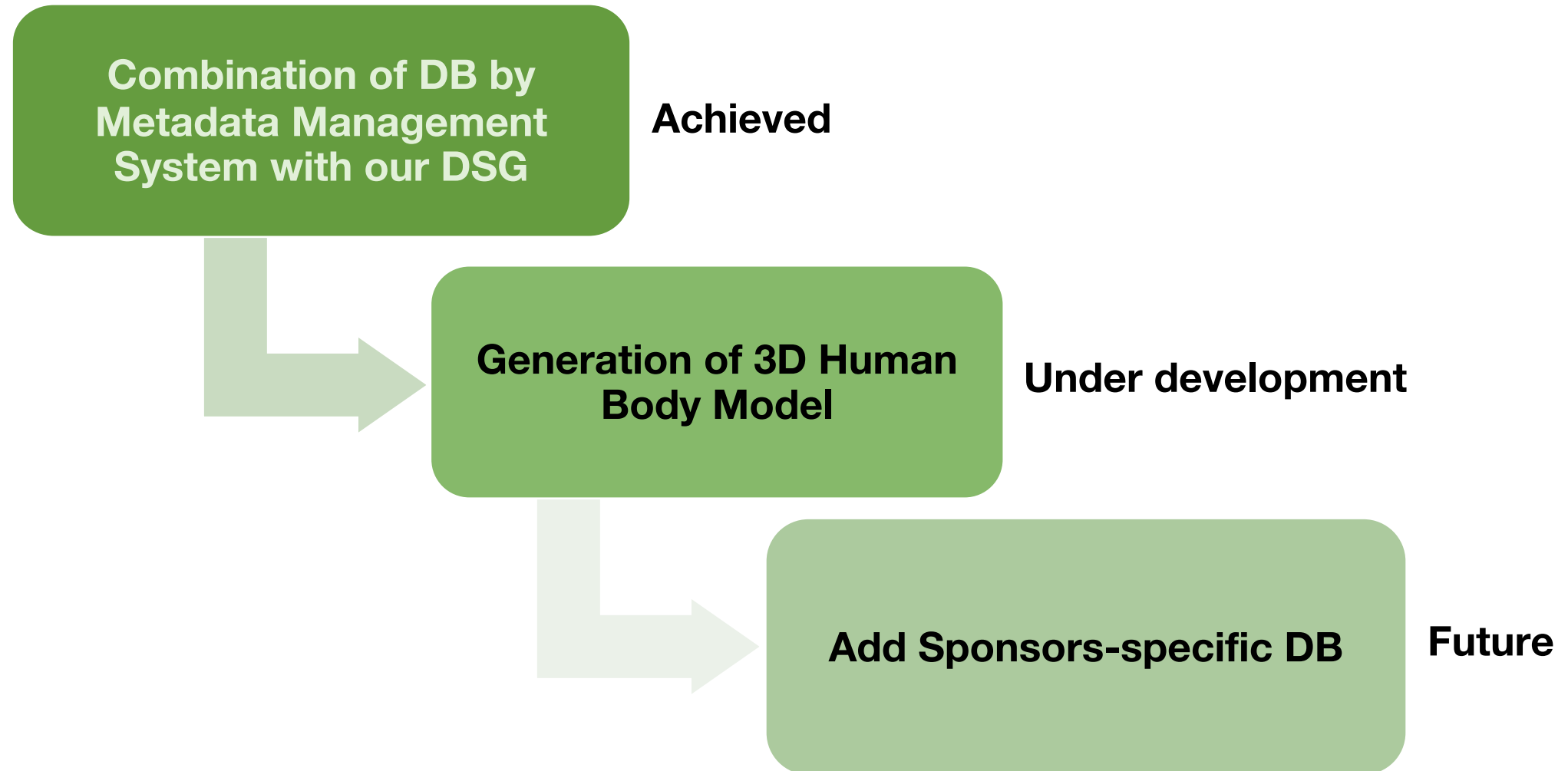
- Novel targets
- Drug formulation
- Target-drug interactions
- Potential adverse events
- Drug viability, metabolism
- Age-dependent responses
- Targeted and more effective therapies

User Experience

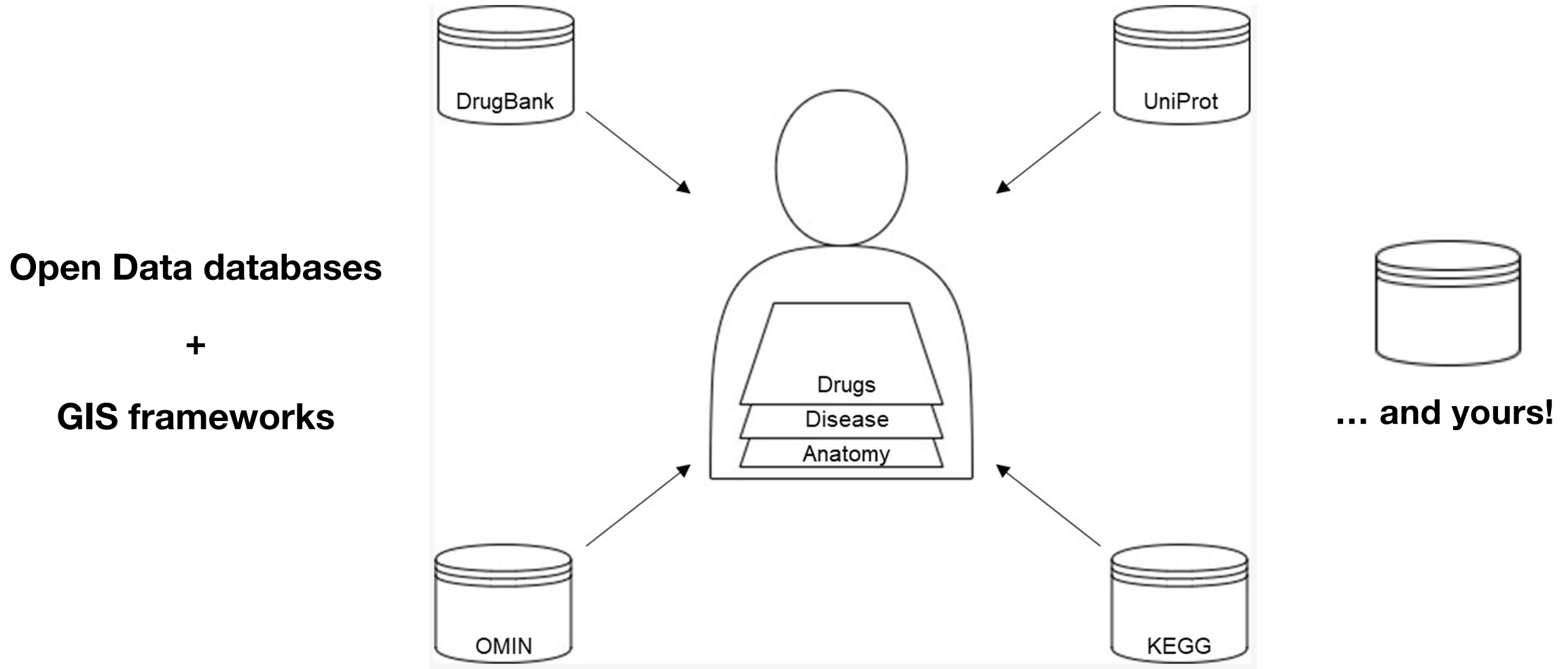
- User-friendly interface
- Visually integrated data
- Simplifies understanding → complex information easily accessible
- Advance search functionality
- Improve collaboration among researchers, pharmaceutical companies, and regulatory authorities



**SAVING TIME AND MONEY FOR
IMPROVING THE OUTCOME OF CLINICAL TRIALS**



Summary and Conclusion



Human BioGeography™ for improving clinical trial outcome

Contact us



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