

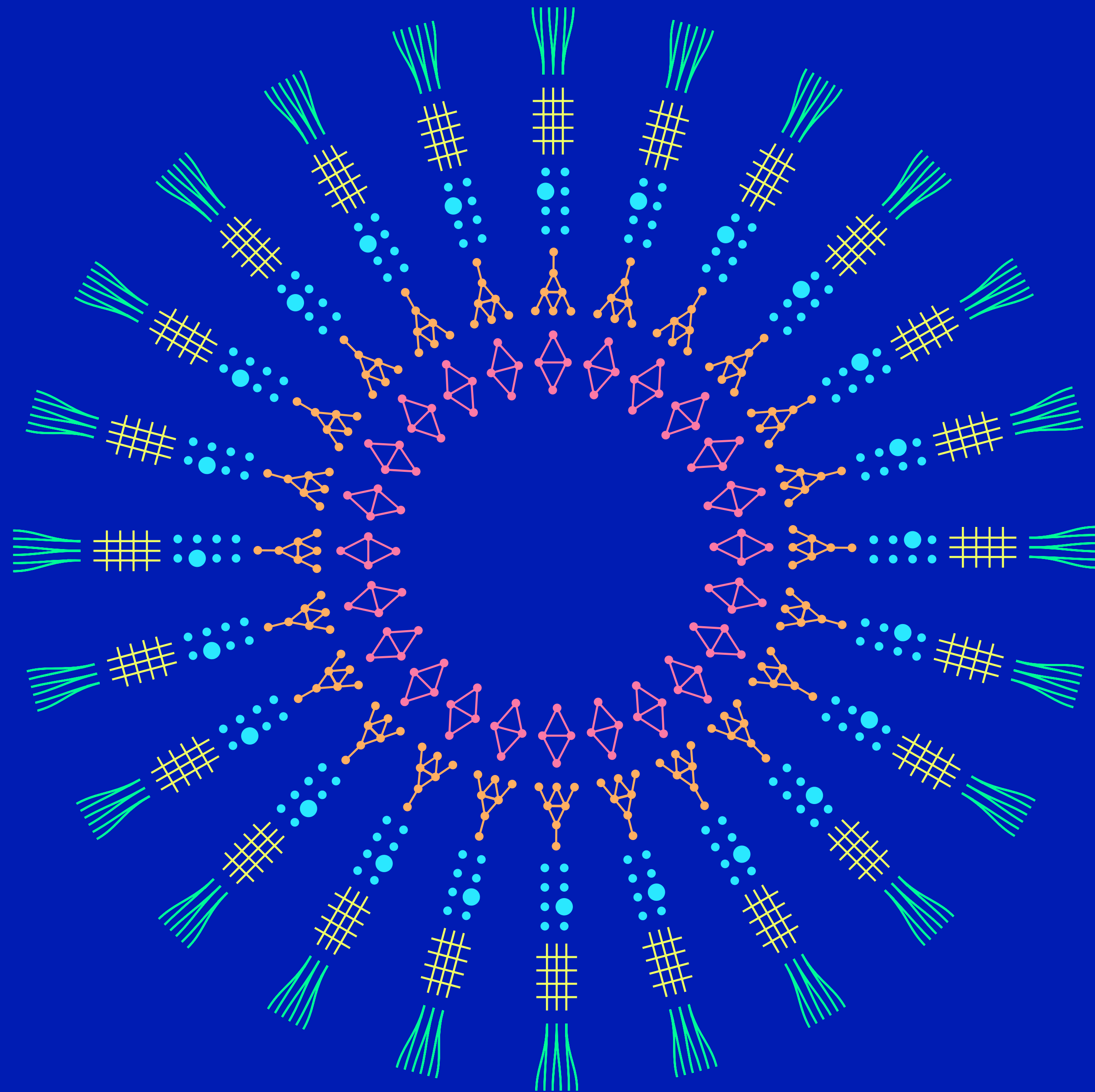


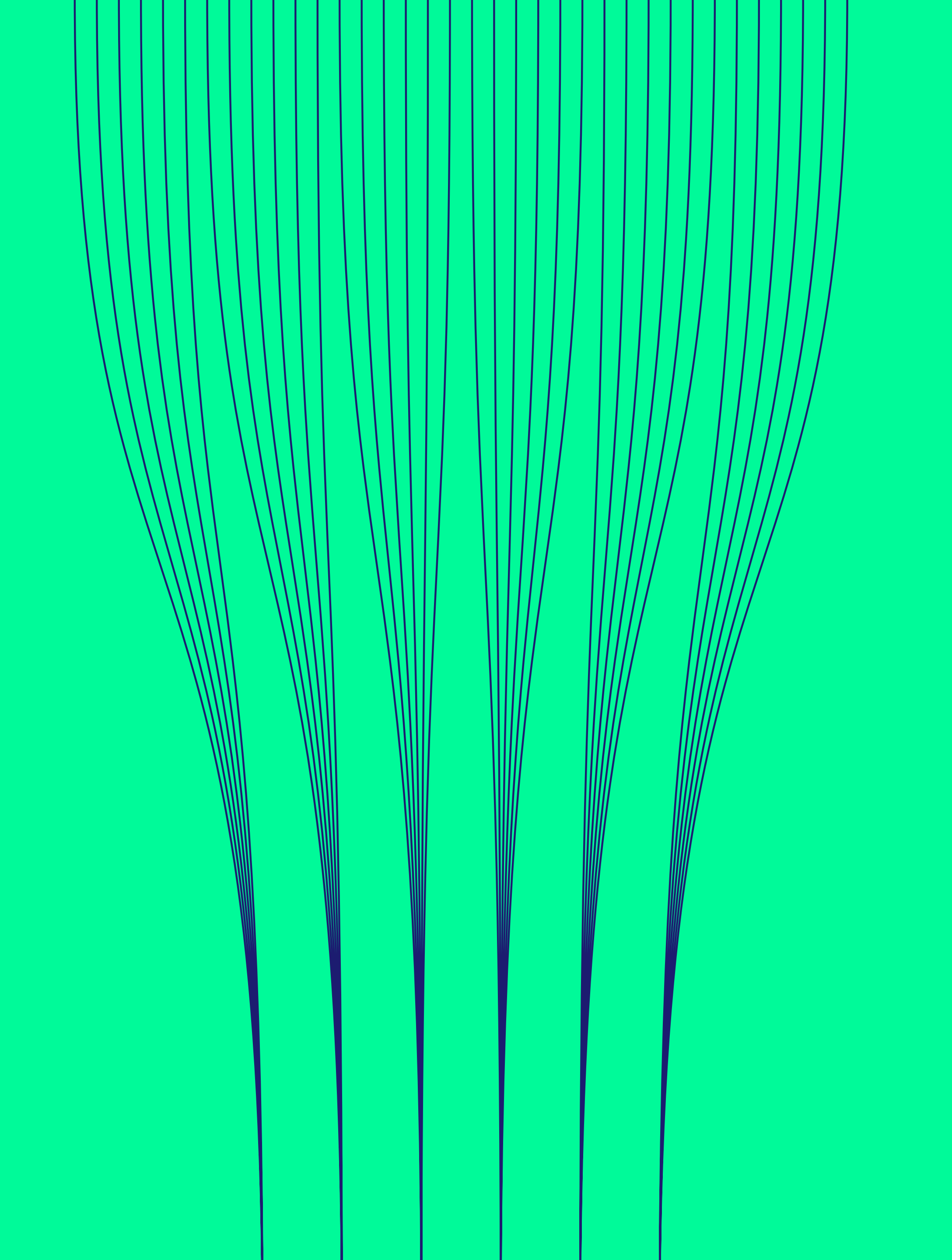
COSBI

COSBI Services

INCLUDED SERVICES

- Knowledge Extraction
- Omics Data Analysis & Integration
- Drug Repurposing
- Biomarker Signature Identification
- PBPK & PK/PD Modeling
- Quantitative Systems Pharmacology
- AI-based Modeling & Simulation





Knowledge Extraction

WHAT WE DO

AI-based extraction of structured biomedical knowledge from literature, clinical-trial sources, and selected databases to support target discovery, mechanism mapping, and hypothesis generation.

HOW WE WORK

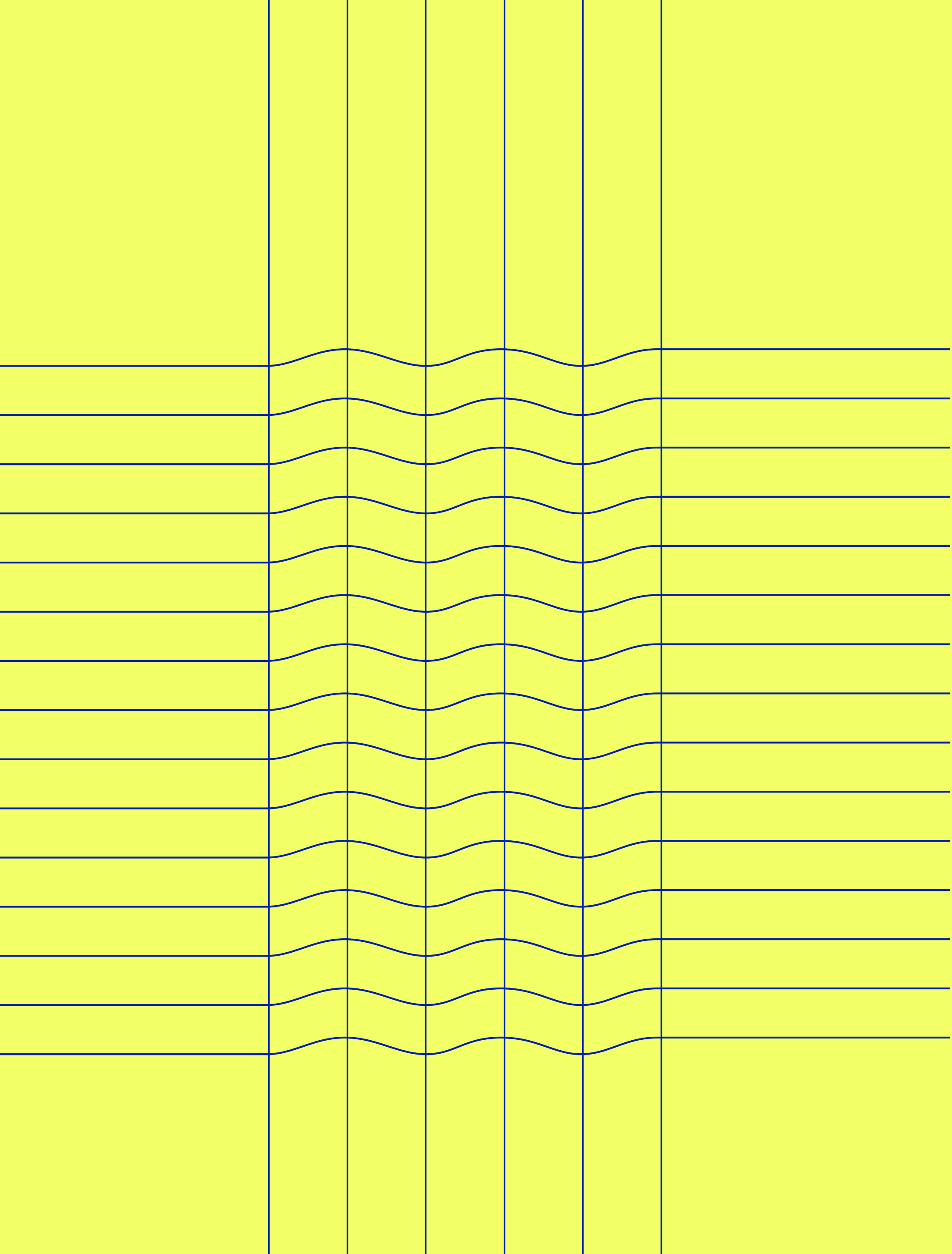
We mine sources such as PubMed/MEDLINE, PMC, and clinical-trial corpora with biomedical NLP pipelines that detect and normalize genes, variants, diseases, drugs, pathways, and chemicals. Automated extraction is combined with entity-aware curation and biological contextualization to turn dispersed evidence into usable knowledge assets.

APPLICATIONS

- Target discovery
- Mechanism elucidation
- Causal evidence mapping
- Hypothesis generation

KEY DELIVERABLES

- Curated evidence tables
- Mechanism maps
- Ranked target shortlists
- Structured knowledge assets
- Interactive network visualizations/dashboards



Omics Data Analysis & Integration

WHAT WE DO

Integration of Genome Wide Association Studies (GWAS), transcriptomic, single-cell, proteomic, and related omics data to uncover disease mechanisms, prioritize candidate causal genes, and identify molecularly defined patient subgroups.

HOW WE WORK

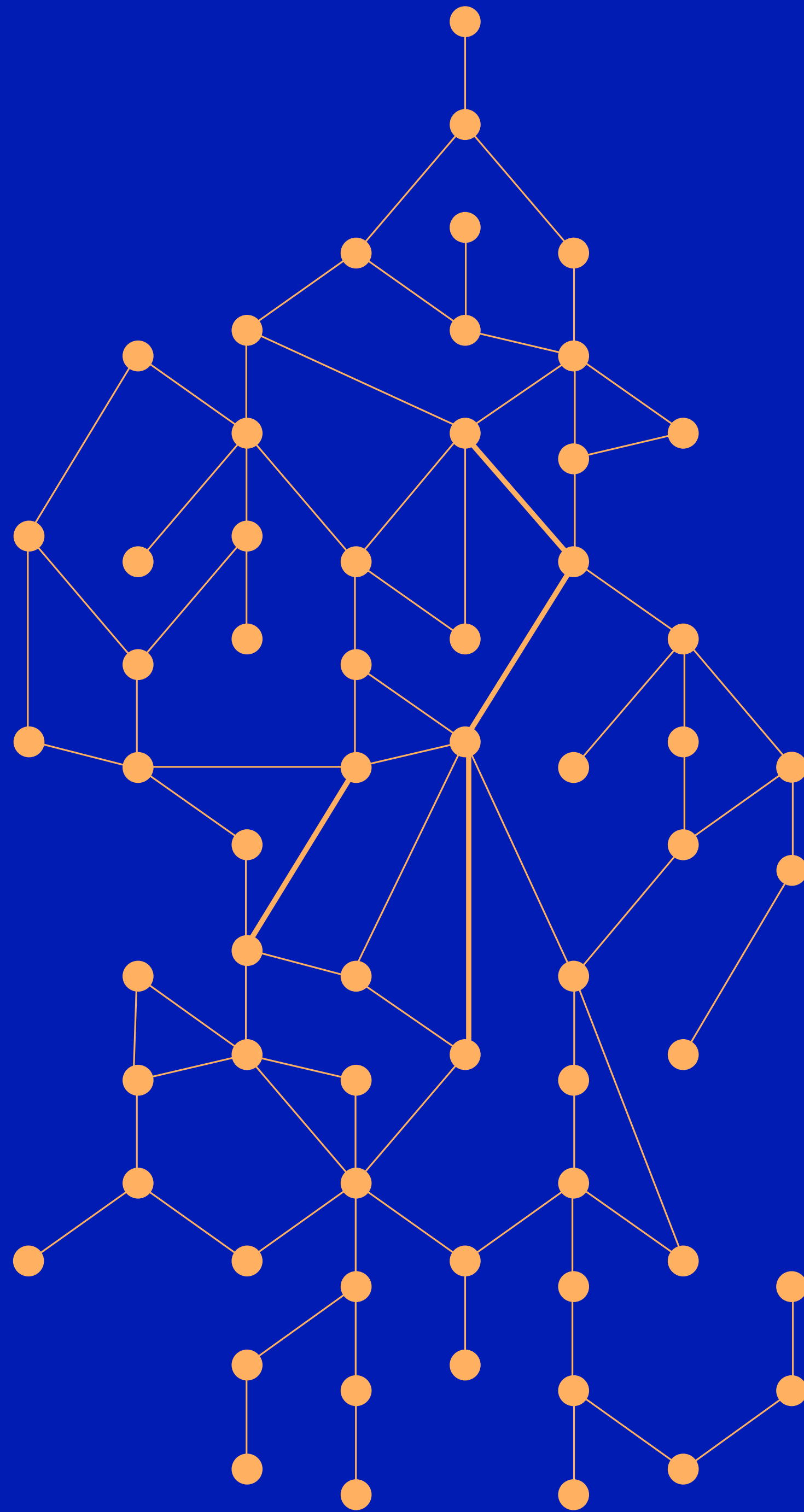
We combine quality-controlled multiomics datasets within a systems biology framework using molecular pathway analysis and network-based methods. This approach combines heterogeneous data layers to identify coherent biological signals and translate them into actionable findings.

APPLICATIONS

- Candidate causal gene prioritization
- Pathway prioritization
- Molecular disease stratification
- Patient subgroup discovery

KEY DELIVERABLES

- Integrated analysis reports
- Ranked candidate genes and pathway lists
- Pathway and network visualizations
- Documented and reproducible analysis workflows



Drug Repurposing

WHAT WE DO

Prioritization of drug-repurposing opportunities by integrating genetics, omics data, literature evidence, and drug- and disease-associated transcriptomic signatures.

HOW WE WORK

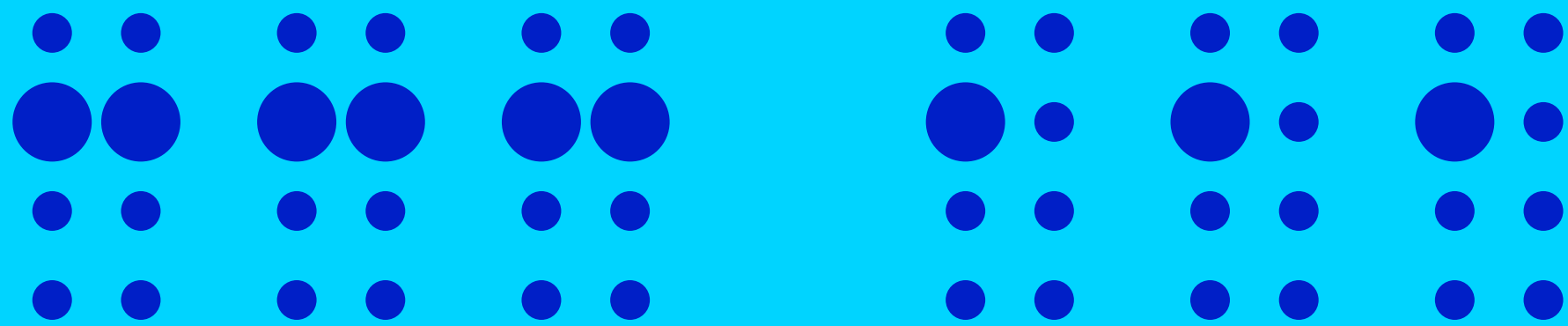
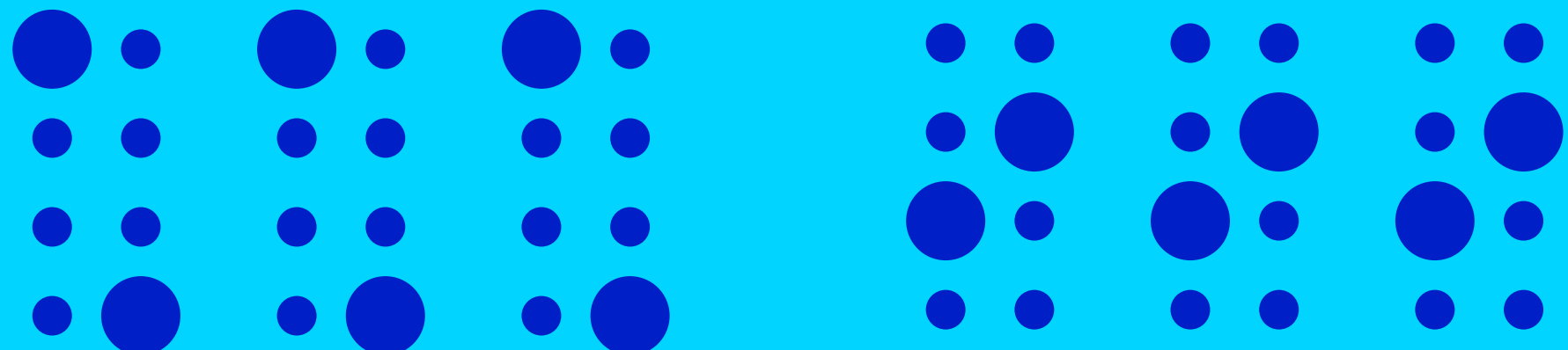
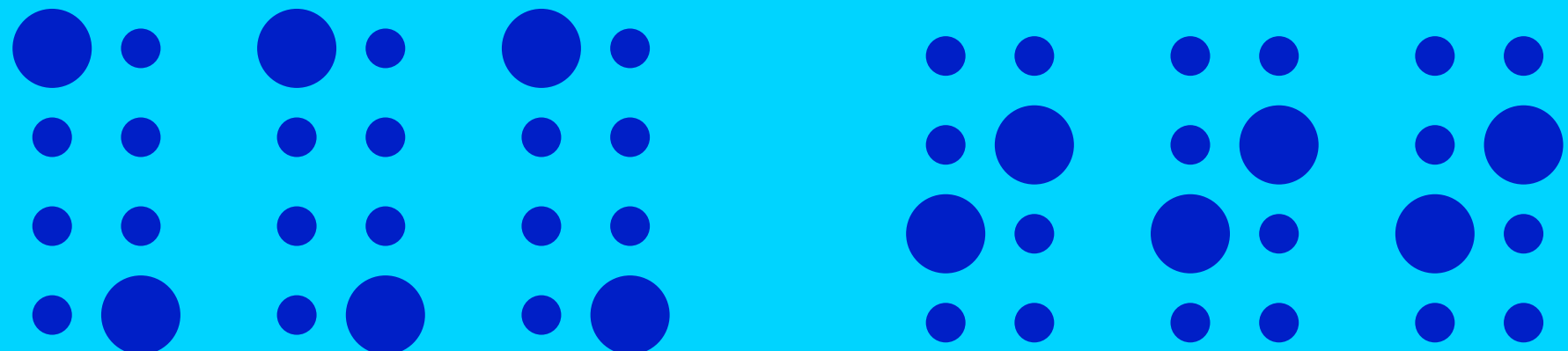
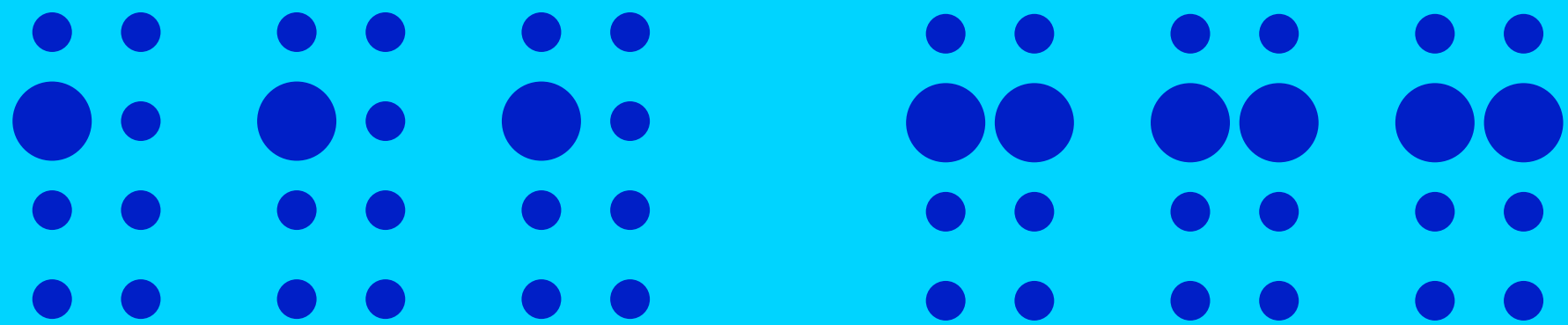
We connect disease biology with drug targets, pathways, and perturbation profiles using an integrated evidence-ranking framework. Candidates are prioritized based on network proximity, mechanistic relevance, and supporting genetic, molecular, pharmacological, and literature evidence, generating an interpretable, evidence-backed shortlist for follow-up.

APPLICATIONS

- Indication expansion
- Rare-disease therapeutic prioritization
- Portfolio prioritization
- Therapeutic hypothesis generation

KEY DELIVERABLES

- Ranked drug-repurposing candidates
- Integrated evidence matrices
- Mechanistic rationale for prioritized candidates
- Drug-disease network visualizations



Biomarker Signature Identification

WHAT WE DO

Discovery of robust molecular signatures for phenotype classification, patient stratification, prognosis, and response prediction by integrating transcriptomic, proteomic, and metabolomic data.

HOW WE WORK

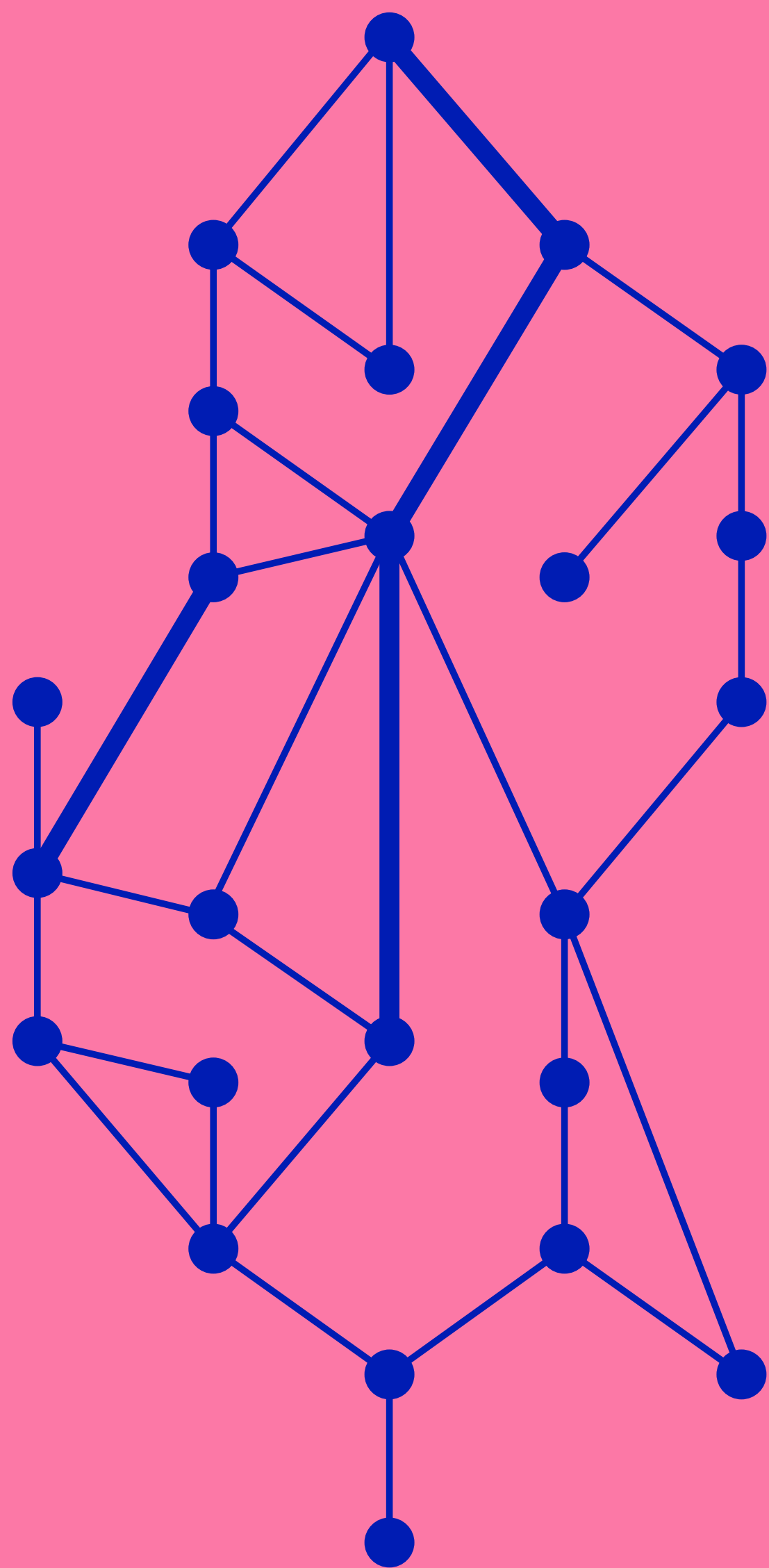
We apply robust analytical pipelines to identify compact and interpretable biomarker panels from molecular profiling data. Candidate signatures are evaluated using cross-validation, feature ranking, and predictive performance assessment, then interpreted in the context of biological pathways and disease context.

APPLICATIONS

- Patient stratification
- Treatment response prediction
- Companion diagnostic support
- Phenotype classification

KEY DELIVERABLES

- Prioritized biomarker signatures and panels
- Predictive performance statistics
- Cross-validation and robustness assessment
- Biological interpretation summaries



PBPK & PK/PD Modeling Services

WHAT WE DO

Mechanistic PBPK modeling, complemented by targeted PK/PD and exposure-response analyses, to support dose selection, exposure assessment, and translational decision-making.

HOW WE WORK

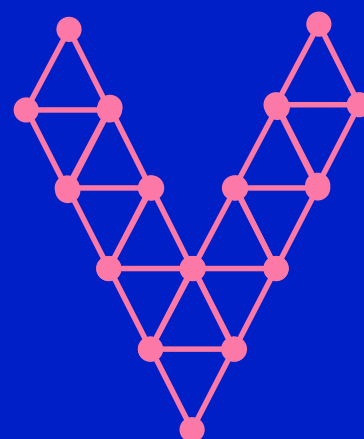
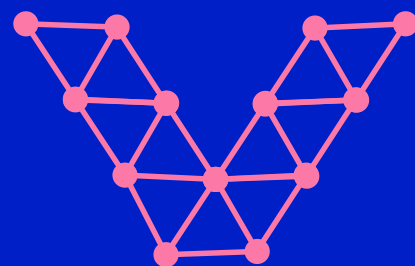
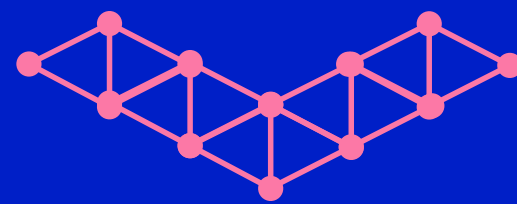
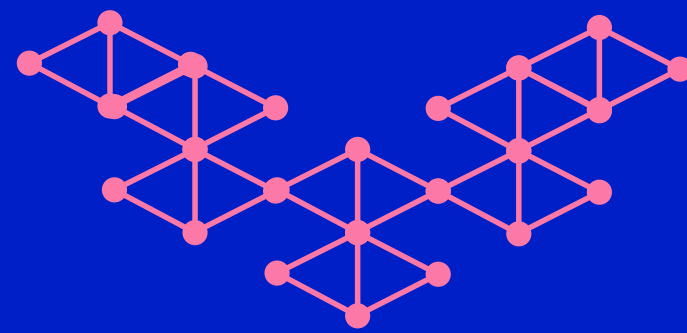
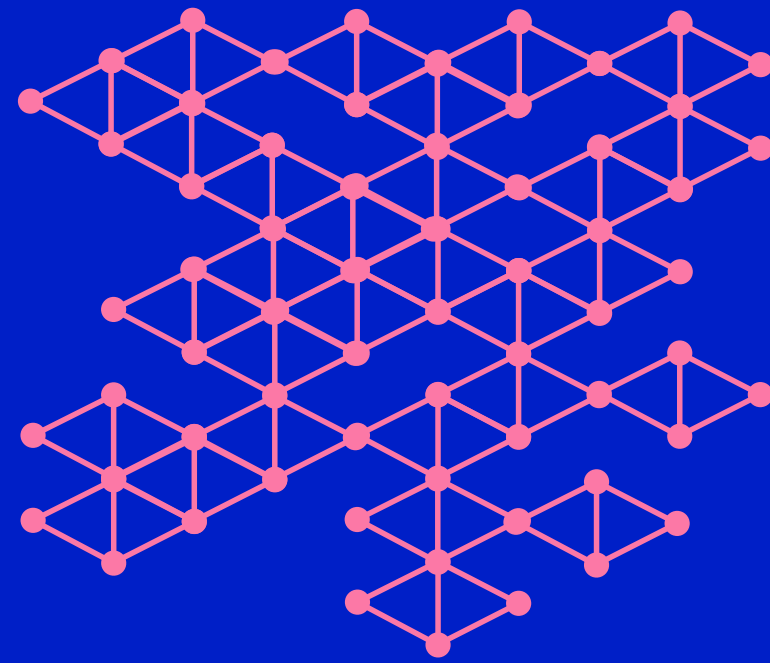
We build mechanistic PBPK models by integrating compound properties, physiological knowledge, and preclinical or clinical data into simulation frameworks. Models are calibrated and evaluated to explore dose regimens, variability, exposure profiles, and translational scenarios relevant to development decisions.

APPLICATIONS

- Dose optimization
- First-in-human support
- Study design
- Exposure prediction and variability assessment

KEY DELIVERABLES

- PBPK models with optional PK/PD extensions
- Scenario simulations
- Model qualification summaries
- Decision-support documentation



Quantitative Systems Pharmacology

WHAT WE DO

Models linking molecular and signalling pathways, cells, tissues, and whole body physiology.

HOW WE WORK

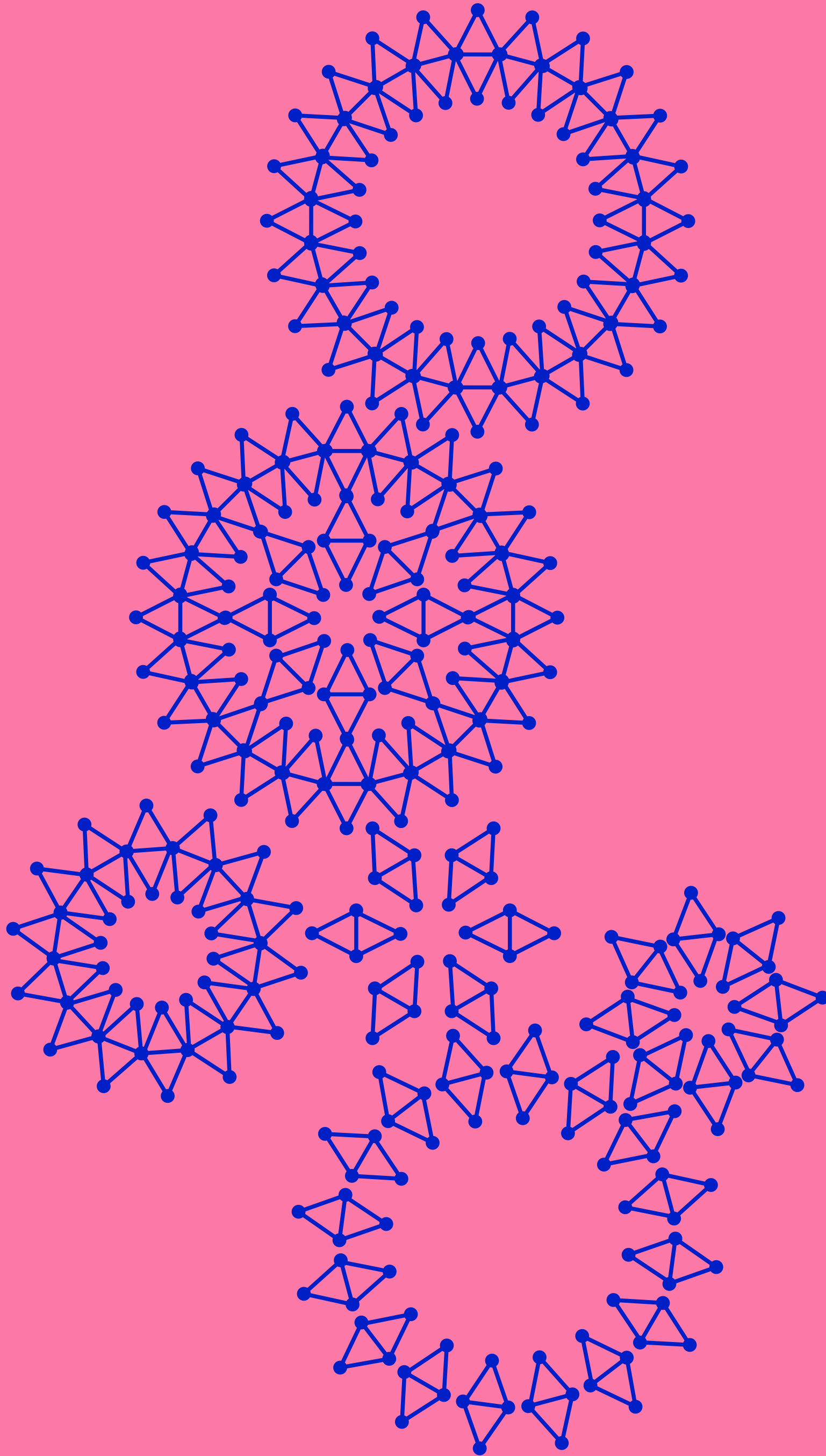
We develop deterministic QSP models tailored to the therapeutic question, combining biological knowledge, literature evidence, and experimental data. The models are used for simulation, sensitivity analysis, in silico clinical trial simulations, and exploration of therapeutic scenarios under uncertainty.

APPLICATIONS

- Mechanism-of-action studies
- Target validation
- Combination therapy assessment
- In silico clinical trial simulation

KEY DELIVERABLES

- QSP models, code, and documentation
- Simulation reports
- Sensitivity analyses
- Scenario testing outputs



AI-based Modeling & Simulation

WHAT WE DO

We integrate AI and machine learning with mathematical and mechanistic modeling to improve prediction, simulation, and quantitative decision-making in biomedical R&D.

HOW WE WORK

We combine machine learning approaches, including artificial neural networks, with mathematical and mechanistic models to capture complex biological dynamics and complement processes that are only partially characterized. These hybrid approaches support predictive simulation, model personalization, and individualized computational frameworks while retaining biological interpretability.

APPLICATIONS

- Hybrid AI-mechanistic modeling
- Predictive simulation
- Digital twin frameworks
- Individualized modeling

KEY DELIVERABLES

- Hybrid predictive models
- AI-enhanced simulation frameworks
- Individualized computational models
- Predictive analytics and model performance assessments