Predicting safe and effective drug combinations for better patient outcomes

By leveraging advanced computational methods for drug combination predictions, this biotech uncovered top-ranking combinations, leading to successful phase I trials.

Innovative therapeutics for age-related diseases

Our client is focused on discovering and developing therapeutics to delay the onset of multiple age-related diseases. Identifying synergistic drug combinations for an aging population is at the core of this company's business model.

The company needed a comprehensive drug combination prediction solution that would help accelerate its discovery process and enable it to confidently make asset and indication prioritization decisions.

Identifying synergistic drug combinations.

Clarivate™

Advanced computational approach for predicting synergistic drug combinations

Clarivate™ consultants developed a computational drug synergy prediction approach that utilizes signatures built for proxy indications and drugs based on various data sources, including biomarker and drug target data from Clarivate data sources, as well as publicly available expression signatures (Figure 1).

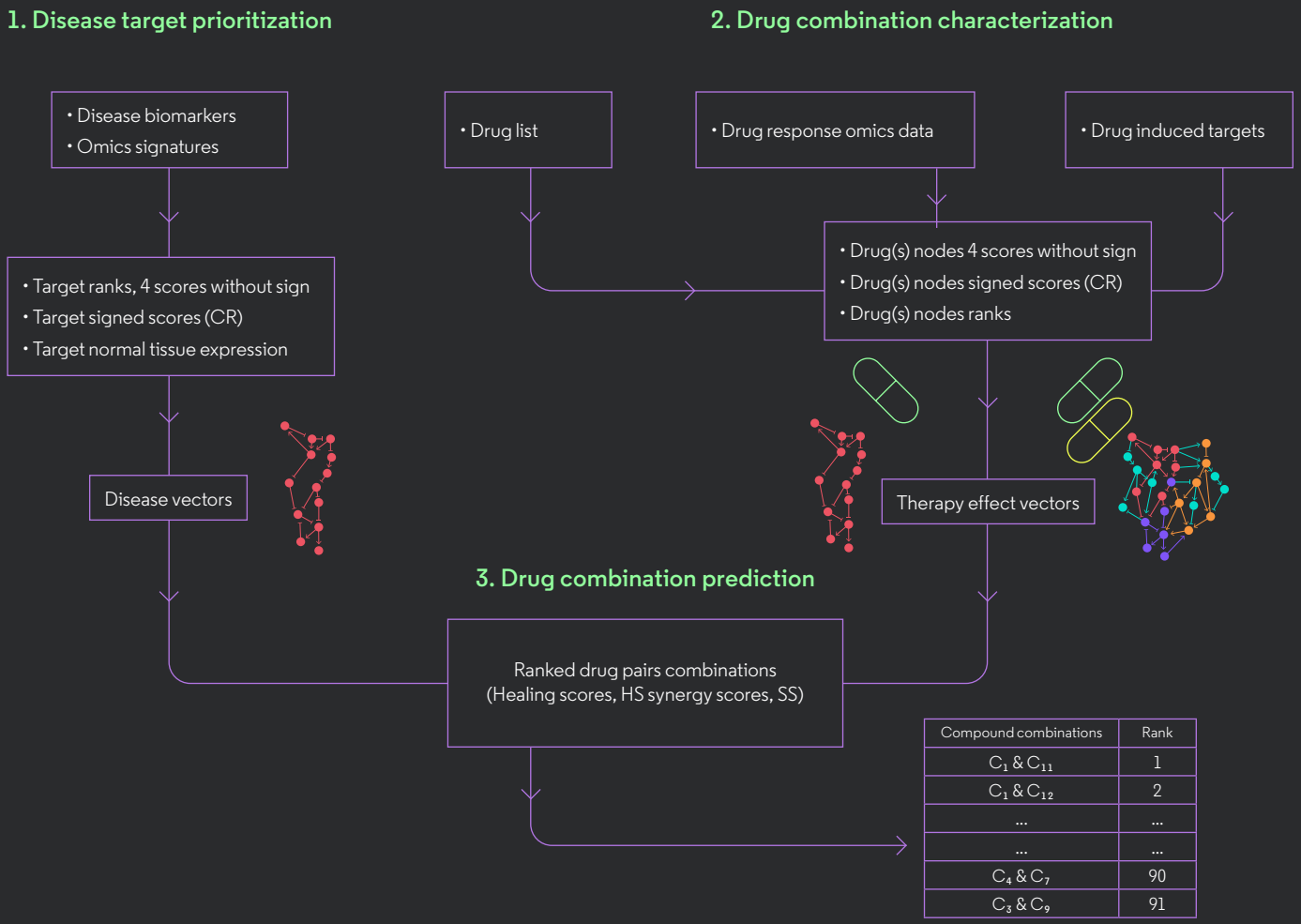
Using this input data, our discovery and translational scientists identified disease targets and relevant vectors through proprietary target-ID pipeline and customized analyses. We then generated drug downstream nodes network scores and rankings using knowledge graphs and network analysis methods.

These disease and therapy effect signatures were embedded into a vector space, allowing us to compare them by computing distance measures that translate into healing scores (comparing disease and therapy) and synergistic scores (comparing healing scores of individual drugs and their combinations). These scores enabled us to rank drug combinations with potential synergistic efficacy for the indications of interest.

Advancing to phase II following early clinical success

Our client prioritized one of the top-ranking combinations for further experimental research. Since then, it has completed phase I trials for two indications — meeting primary and secondary endpoints and demonstrating positive clinical outcome data — and is now moving into phase II stage.

Figure 1: Advanced computational approach for predicting synergistic drug combinations



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