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Case Study | Clarivate Consulting Services

Identifying causal genes to be used as drug targets

A top 10 global pharmaceutical company wanted to build its pipeline for identification of causal genes within genome-wide association study (GWAS) loci using Parkinson's disease as a test case and extending to other indications later.

Linking GWAS hits and causal genes in complex disease is typically a multi-step process that starts with the identification of the true causal variant, followed by linking to the target gene.

Power of extensive data sources and advanced analytics

The Clarivate™ Discovery and Translational Sciences consulting team proposed a complementary systems biology approach, leveraging functional gene annotations to directly infer the most likely causal gene in the associated locus. The team used a proprietary Clarivate analytic workflow that was developed to discover drug targets. Data sources for the workflow include Cortellis Drug Discovery Intelligence™, which has biomarker data for ~3K diseases; MetaBase™, which has ~1.5M molecular interactions; and the Clarivate Computational Biology Methods for Drug Discovery (CBBD) program, which focuses on the implementation of advanced state-of-the-art approaches for network and pathway analysis of OMICs data. Data integration was accomplished using machine learning analysis to build a predictive model and prioritize the targets.

Based on the output, the company benefitted from the following:

- an integrated workflow for annotation and prioritization of candidate genes from GWAS loci,
- the ability to highlight the most likely causal gene in each GWAS locus and
- promising causal genes for Parkinson's disease risk, with detailed supportive external evidence.

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For more information on how the Discovery and Translational Sciences consulting team can help accelerate your research with advanced analytics and actionable insights, visit our website at:

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