Improving Target Identification with Phenovault



- Database & Analysis Suite for RNAi/CRISPR Screens

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RNA interference (RNAi) and CRISPR screens produce a wealth of information on gene function. However, published analyses only focus on a few top-scoring genes. Most of the information lies buried in supplementary materials, invisible and untapped. Phenovault is a growing database and analysis suite hosted by siTOOLs Biotech that contains complete datasets from published RNAi/CRISPR screens. With over 100 million data-points, Phenovault is the largest curated RNAi screening repository. siTOOLs uses public and proprietary algorithms to reveal seed-based hit genes from customer RNAi screens. For example, a kinome screen of 700 genes can be used to find seed-based hits in the entire human genome, thus transforming a narrowly focussed screen into a genome-wide RNAi screen. Phenovault algorithms uncover single genes with strong effect and gene networks that drive phenotypes.

Phenovault - Largest Curated RNAi Database & Analysis Suite

Inside the Phenovault



Seed Effects Dominate RNAi Screens



RNAi-induced Phenotypes Largely Attributed to Seed-based Off-Targeting



translation Seed inhibition miRNA (**2-7 nt**) siRNAs can mimic endogenous miRNAs, acting via the seed to downregulate off-target genes

Using Seed Effects to Find Novel Targets & Data Insights



On-target and off-target analysis: Find key genes that drive phenotypes



Seed triage analysis: Identify false positives

- Analysed 64,755 siRNAs (3 siRNAs/gene)² - Feature: % Parkin translocation



SLMO1 hit likely false positive due to strong seed effect

What Customers Say:

"My group worked with siTOOLs to analyze several siRNA screening datasets." Using Phenovault we were able to extensively analyze on- and off-target effects and ultimately identify several interesting cancer targets and pathways. Considering the complexity of the siRNA activity, Phenovault provides very valuable information enabling to fully capitalize on experimental data. I would definitively recommend Phenovault to all investigators involved with siRNA screening."

- Jean Philippe Stephan, Director Center of Excellence Pharmacological Screening, Compound Management and Biobanking, Servier Research Institute, France.

References 1. Balestra, F. R., Strnad, P., Flückiger, I., and Gönczy, P. (2013) Discovering Regulators of Centriole Biogenesis through siRNA-Based Functional Genomics in Human Cells. Dev. Cell. 25, 555–571 2. Hasson, S. A., Kane, L. A., Yamano, K., Huang, C.-H., Sliter, D. A., Buehler, E., Wang, C., Heman-Ackah, S. M., Hessa, T., Guha, R., Martin, S. E., and Youle, R. J. (2013) High-content genome-wide RNAi screens identify regulators of parkin upstream of mitophagy. Nature. 504, 291–5

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