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RNAi, Gene Expression & Gene Editing

RNAi Screening References

General interest publications for screeners:

This paper draws upon experiences from an RNAi screening facility that has performed many genome-wide siRNA screens to discuss frequent questions and considerations for the benefit of researchers who are new to RNAi screening.

1. M. Jiang, B. Saunders, et al. Tales from an academic RNAi screening facility; FAQs. *Brief Funct. Genomics* 10(4), 227-237 (2011).

A review of statistical techniques to analyze screens, highlighting particular characteristics of RNAi screen data that must be addressed during analysis and providing guidance on selection of analysis techniques in the contextof a sample workflow.

2. A. Birmingham, L.M. Selfors, et al. Statistical methods for analysis of high-throughput RNA interference screens. *Nature Methods* 6, 569-575 (2009).

A selection of screening publications using Dharmacon RNAi Libraries:

1. N. Warner, A. Burberry, et al. A Genome-wide siRNA screen reveals positive and negative regulators of the NOD2 and NF-{kappa}B signaling pathways. *Science Signaling 6*, 258 (2013).
    Screening library: Dharmacon™ siGENOME™ Human SMARTpool™ siRNA Library – Genome
    Follow-up/hit validation: Dharmacon™ On-Target*plus*™ Human SMARTpool siRNA reagents

2. P. Kozik, N.A. Hodson, et al. A human genome-wide screen for regulators of clathrin-coated vesicle formation reveals an unexpected role for the V-ATPase. *Nature Cell Biology 15*, 50-60 (2013).
    Screening library: siGENOME Human SMARTpool siRNA Library – Genome
    Follow-up/hit validation: ON-Target*plus* Human SMARTpool siRNA reagents

3. M. Steckel, M. Molina-Arcas, et al. Determination of synthetic lethal interactions in KRAS oncogene-dependent cancer cells reveals novel therapeutic targeting strategies. *Cell Research 22*, 1227-1245 (2012).
    Screening library: siGENOME Human SMARTpool siRNA Library – Protein Kinase, GPCR, and Druggable Genome
    Follow-up/hit validation: On-Target*plus* Human SMARTpool and siGENOME Set of 4 siRNA reagents

4. J. Chia, G. Goh, et al. RNAi screening reveals a large signaling network controlling the Golgi apparatus in human cells. Mol. Syst. *Biology 8*, 629 (2012).
    Screening library: SMARTpool siRNA Library – Customer-specified, membrane traffic regulators
    Follow-up/hit validation: Set of 4 siRNA reagents

5. I. Keklikoglou, C. Koerner, et al. MicroRNA-520/373 family functions as a tumor suppressor in estrogen receptor negative breast cancer by targeting NF-κB and TGF-β signaling pathways. *Oncogene 31*, 4150-4163 (2012).
    Screening library: Dharmacon™ Human miRIDIAN™ Mimic microRNA Library

6. A. Genovesio, M.A. Giardini, et al. Visual genome-wide RNAi screening to identify human host factors required for Trypanosoma cruzi infection. *PLoS One 6(5)*, e19733 (2011).

7. A.M. Mendes-Pereira, D. Sims, et al. Genome-wide functional screen identifies a compendium of genes affecting sensitivity to tamoxifen. *PNAS USA 109(8)*, 2730-2735 (2011).
    Screening library: Dharmacon™ Human GIPZ™ shRNA library – Genome Packaged into viral particles as 6 pools for a multiplex shRNA screening method

8. G.R. Hoffman, N.J. Moerke, et al., A high-throughput, cell-based screening method for siRNA and small molecule inhibitors of mTORC1 signaling using the In Cell Western technique. *Assay Drug Development Technologies 8(2)*, 186-199 (2010).
    Screening library: siGENOME Human SMARTpool siRNA Library – Genome
    Follow-up/hit validation: siGENOME Human Set of 4 siRNA reagents

9. G. Hu, J. Kim, et al. A genome-wide RNAi screen identifies a new transcriptional module required self renewal. *Genes and Dev. 23*, 2837-848 (2009).
    Screening library: siGENOME Mouse SMARTpool siRNA Library – Genome
    Follow-up/hit validation: siGENOME Mouse Set of 4 siRNA reagents

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10. M. Tsui, J.D. Orth, et al. An intermittent live cell imaging screen for siRNA enhancers and suppressors of a kinesin-5inhibitor. *PLoS ONE 4(10)*, e7339 (2009).
   Screening library: siGENOME Human SMARTpool siRNA Library – Genome

11. E. Iorns, C.J. Lord, et al. Integrated functional, gene expression and genomic analysis for the identification of cancer targets. *PLoS ONE 4(4)*, e5120 (2009).
   Screening library: Dharmacon siGENOME Human SMARTpool siRNA Library – Protein Kinase
   Follow-up/hit validation: Dharmacon On-Target*plus* Human SMARTpool siRNA reagents

12. M.N. Krishnan, A. Ng, et al. RNA interference screen for human genes associated with West Nile virus infection. *Nature 455*, 243-247 (2008).
   Screening library: siGENOME Human SMARTpool siRNA Library – Genome

13. K.J. Simpson, L.M. Selfors, et al. Identification of genes that regulate epithelial cell migration using an siRNA screening approach. *Nat. Cell Biol. 10*, 1027-1038 (2008).
   Screening library: siGENOME Human SMARTpool siRNA Library – Custom library of 1081 genes encoding phosphatases, kinases, and genes predicted to influence cell migration and adhesion.
   Follow-up/hit validation: On-Target*plus* Human SMARTpool siRNA reagents

14. A,W. Whitehurst, B.O. Bodemann, et al. Synthetic lethal screen identification of chemosensitizer loci in cancer cells. *Nature 446*, 815-819 (2007).
   Screening library: siGENOME Human SMARTpool siRNA Library – Genome

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