

# GeneNet™ RNAi Libraries

Human or Mouse Genome-wide shRNA Libraries for Screening Genes Regulating Cellular Responses or Signaling Pathways



System Biosciences GeneNet™ shRNA Libraries allow you to perform high-throughput gene knockdown studies on a genome-wide or pathway-focused basis. Developed to be an affordable approach, pooled GeneNet Libraries enable simultaneous identification of multiple genes that alter a specific cellular phenotype in a single experiment. GeneNet libraries are available as prepackaged virus, so you can begin infecting cells the day you receive the library. Choose from FIV- or HIV-based vectors depending upon transfection efficiency in your cell type.

## The GeneNet Advantage

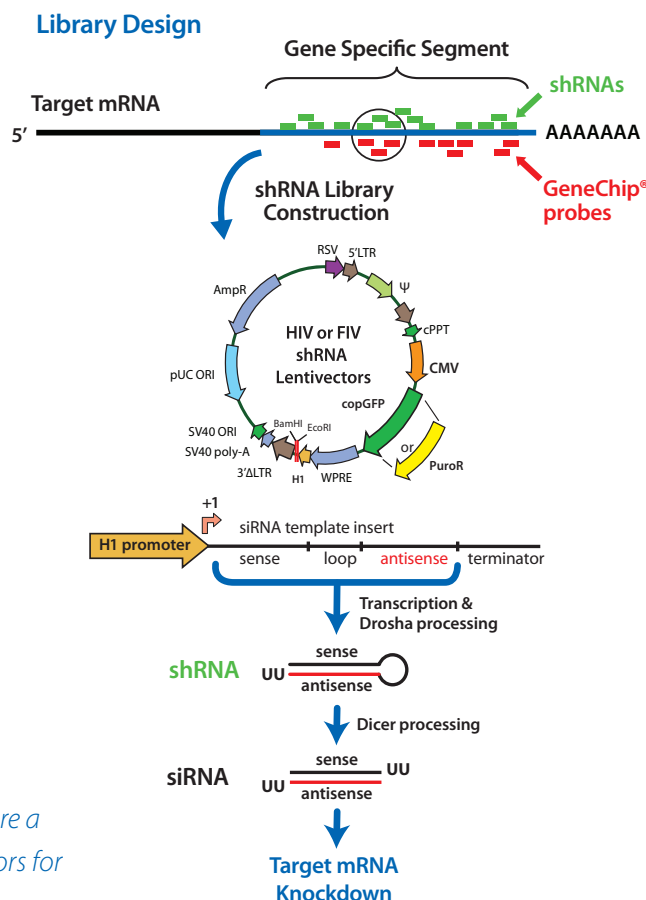
SBI's genome-wide shRNA libraries have been popular with researchers worldwide for over 3 years. All library technology was developed in-house, and our team of scientists offer unparalleled support and expertise to assist with experimental screen design and optimization. An shRNA library pool is only as good as the viral delivery system it uses. SBI's lentiviral technology is world-class—our viruses have proven efficacy.

GeneNet libraries are compatible with standard Affymetrix chips to allow for easy identification of effector shRNA sequences after screening. SBI provides comprehensive data analysis tutorial software with all libraries. Our experienced technical support staff are available to assist with interpreting results of screens using our RNAi libraries.

*SBI's GeneNet RNAi Libraries are a pooled set of shRNA lentivectors for comprehensive RNAi screens.*

## Highlights

- RNAi libraries for Human or Mouse genome-wide screens and Human pathway-focused screens
- Identify potential drug targets or diagnostic markers
- Find crucial regulatory genes using routine growth selections or flow sorting
- High-throughput identification of functional shRNAs
- Affordable, cost-effective genome-wide functional analysis
- Choose from shRNA libraries in FIV or HIV-based lentivectors
- Available in plasmid form—produce large quantities of packaged shRNA library in your own lab



## GeneNet: Genome-Wide shRNA Libraries

HIV-based Libraries	Transcripts Targeted	No. of shRNAs
Human 50K	47,400	200,000
Mouse 40K	39,000	150,000

FIV-based Libraries	Transcripts Targeted	No. of shRNAs
Human 50K	47,400	200,000
Mouse 40K	39,000	150,000

## GeneNet: Pathway Focused shRNA Libraries

HIV-based Libraries	Targeted Genes	No. of shRNAs
Human Apoptosis	597	6,876
Human Kinase	897	10,453
Human Phosphatase	244	2,719

# GeneNet RNAi Libraries

## Transduction

Target cells are transduced with the packaged GeneNet Library. With the high-efficiency, pantropic VSV-G pseudotyped HIV or FIV-based lentiviral system, you can achieve transduced cell populations where every cell expresses at least one shRNA.

## Treatment

The transduced target cells are treated to induce the phenotype of interest. For example, the cells may be exposed to radiation, induced to differentiate, enter apoptosis, or used in a drug screen.

## Selection

After treatment, cells with the appropriate phenotype are selected using either a growth selection, flow cytometry for specific markers, or other approaches where the population of cells with the desired phenotype can be isolated and collected.

## Amplification

After selecting the target phenotype cells, the shRNA templates from the library are recovered by PCR. Since the flanking sequences from the library vector are known for all the inserts, these sequences are used to amplify the shRNA templates from either RNA or DNA isolated from the target phenotype population. The shRNA templates from a population of transduced, but untreated cells, will be used as comparison to identify effector shRNAs that are either enriched for or selected out in the screen.

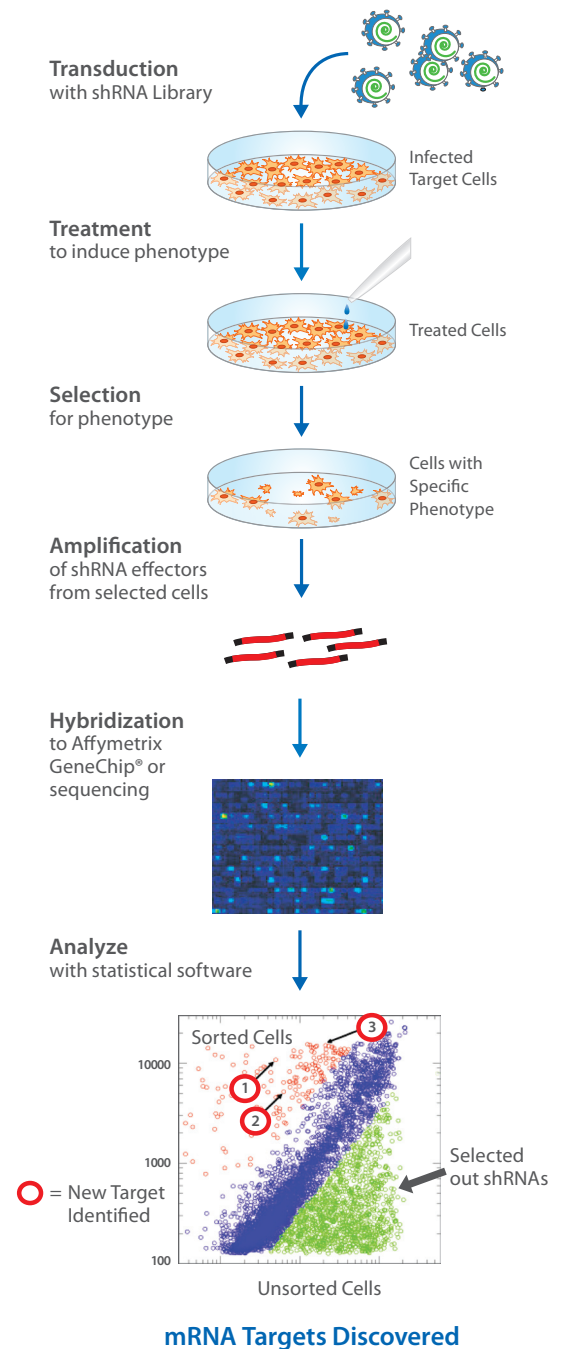
## Identification

Determining the specific shRNAs isolated from the library screen can be easily done by hybridization to Affymetrix GeneChip® Arrays that recognize all the shRNA templates present in the library. To identify critical genes involved in the pathway or response, the shRNAs in the target phenotype population are compared with shRNAs recovered from a control (untreated) cell population. The shRNAs that are over-represented in the phenotype population target genes that regulate the phenotype from the screen. For example, when selecting for radiation resistance, those cells resistant to radiation and surviving the selection presumably contain shRNAs that target genes that would normally make the cells sensitive to radiation. It is these shRNAs that are over-represented in the treated population and can be directly correlated to their targeted genes through sequence identity.

## Data Analysis Support

SBI's experienced scientific staff are available for guidance in developing GeneNet shRNA screens as well as for post-screen consultation and data interpretation.

## Library Workflow



## We Also Offer Custom Services

System Biosciences offers a wide-range of custom services to support your research, allowing you to spend less time making tools, and more time making discoveries. To learn more, visit our website at [www.systembio.com/service](http://www.systembio.com/service) or call us at 888-266-5066.



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