

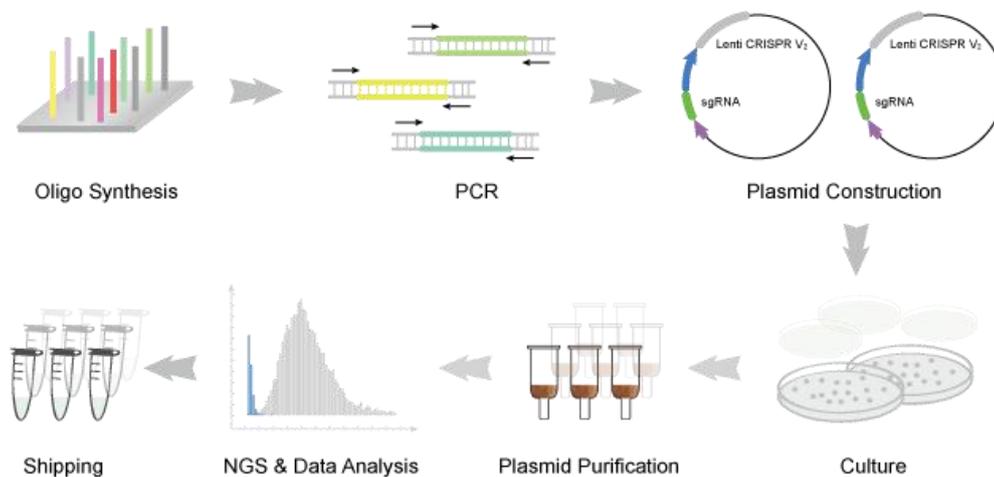
CRISPR Cas9 sgRNA Library Design and Screening

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Studying gene functions in metabolic pathway or disease development is very important for disease mechanism research and drug discovery. Leading a new generation of gene editing technology, the CRISPR-Cas9 system is popular for its simplicity of operation and its universal applicability. Because of these unique advantages, CRISPR-Cas9 technology has become a powerful tool for forward genetic screening. Mutant libraries of various functions can be constructed by CRISPR, and the genes related to this function then identified through functional screening and enrichment, PCR amplification, and deep sequencing analysis.

Synbio Technologies provides one-stop gene function screening services based on the CRISPR-Cas9 sgRNA library system. With our proprietary Syno®3.0 DNA synthesis platform, we can construct a sgRNA library in a fast and efficient manner. We can also package the library into lentivirus, transfect cells, perform high throughput/content screening, and finally identify the target genes by sequencing and data analysis.

CRISPR Cas9 sgRNA Library Design roadmap



sgRNA library construction and screening workflow

Contact us

Synbio Technologies

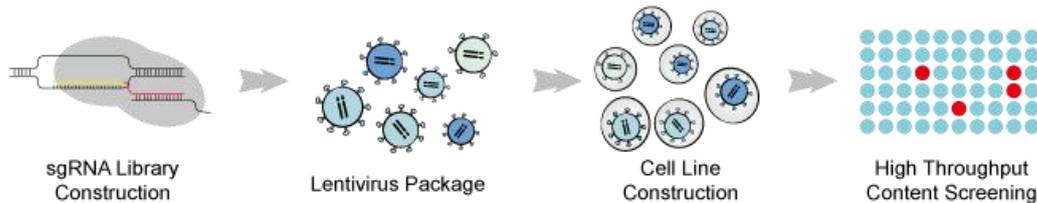
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Advantages of CRISPR Cas9 sgRNA Library Design

- ❖ [Proprietary Syno®3.0 DNA synthesis platform](#): fast and efficient sgRNA library construction
- ❖ [Lentivirus transfection system](#): improve the efficiency of sgRNA transfection
- ❖ [Multiple screening platform](#): including cell survival control, immunostaining, flow cytometry and other screening methods
- ❖ [One-stop solution](#): customized services ranging from sgRNA library design, synthesis, and lentivirus packaging, to high throughput/content screening

CRISPR Cas9 sgRNA Library Design Case Study

Screening resistance targets for a drug with identified function

Methods

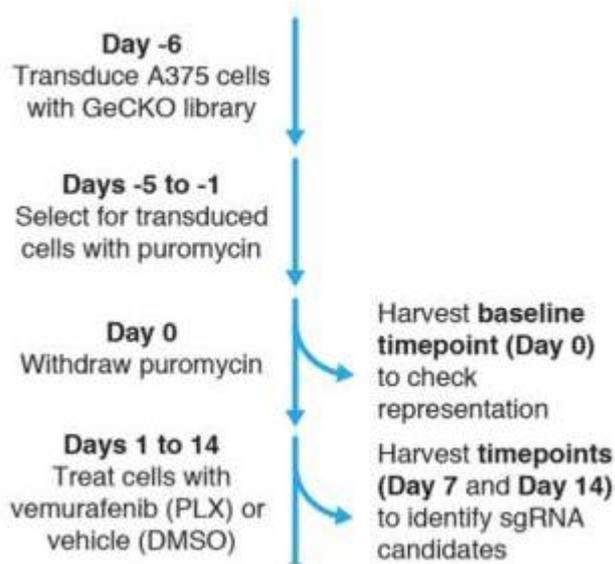
1. The function and lethal dose of the drug have been already identified.
2. CRISPR-CAS9 gRNA was synthesized and transfected into cells using lentivirus.
3. Screening: drug of high concentration acting on the mixed cell clone continuously over a short period, then screening the survived cells. These cells are considered to be resistant to this drug. The reason why these cells gain a resistance to this drug is due to mutagenesis caused by CRISPR-CAS9 gRNA.
4. Perform NGS and bioinformatics analysis on the surviving cells, analyze information about the gRNA, and then identify the genes involved in conferring drug resistance.

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Result

1. Identification of 6 genes involved in PLX resistant when mutant
2. Identification of NF2 as the resistant target of PLX in melanoma

Service specifications

Synbio Technologies provides one-stop solution including sgRNA library design, synthesis, lentivirus packaging, and high throughput/content screening

Service Name	Service Specifications	Timeline	Deliverables
CRISPR-Cas9 sgRNA lentivirus library (Human)	Targeting 21,000 genes; 6 sgRNAs for each gene	Inquiry	Lentivirus, -80 °C preservation

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customized CRISPR-Cas9 sgRNA library	Customized gRNA library, including genome-scale library, lncRNA library, cell apoptosis, cell proliferation, signal pathway, ion channel, nuclear receptor libraries	Inquiry	Lyophilized sgRNA plasmid Sequencing report
lentivirus packaging of sgRNA library	Customized sgRNA design, 6 sgRNA for each gene Lentivirus package	Inquiry	Lentivirus
sgRNA library screening	cell screening using cell survival control, immunostaining, flow cytometry and other screening methods	Inquiry	Screening report and sequencing data

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