

# Lenti-Cas9 SmartNuclease™ Systems

Ready-to-edit Cas9 packaged lentiviral particles & plasmids

## Lentiviral CRISPR/Cas9 Systems

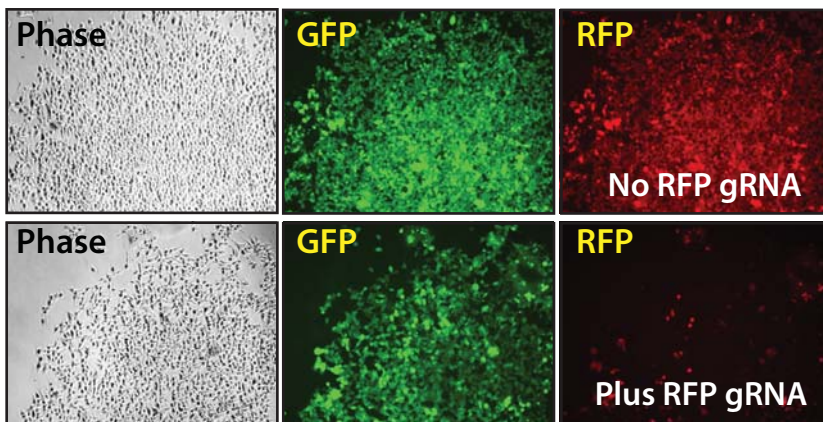
In addition to our industry-leading, all-in-one Cas9 SmartNuclease and SmartNickase plasmid systems, SBI now offers validated CRISPR/Cas9 & gRNA constructs in powerful lentivector formats. SBI's Lenti-Cas9 SmartNuclease system is ideal for targeting cell types that are difficult to transfect with plasmids, effectively expanding the range of target cells amenable for CRISPR/Cas9-based genome engineering and providing an easy and efficient way to generate stable Cas9 editing cell lines.

Due to the large size of the Cas9 gene, packaging CRISPR/Cas9 lentivectors into virus can be challenging. SBI's expert lentivirus packaging team utilizes optimized protocols for producing high-titer Cas9 virus from these large lentivector plasmids. Save time and avoid the hassle of Cas9 virus production with SBI's Lenti-Cas9 pre-made viruses, available in both wild-type and mutant Nickase formats with CMV or MSCV promoters and GFP or Puro-resistance markers.

## Lenti-Cas9 SmartNuclease™ Sample Data

Data in panels below show phase and fluorescent images of modified HEK293T cells stably expressing RFP and GFP (top panels) which have been co-infected with Lenti-Cas9-Puro (MSCV-Cas9-T2A-Puro virus) and gRNA (EF1a-Blasticidin-H1-RFP gRNA virus) to express Cas9 and a guide RNA targeting RFP (bottom panels) at MOI = 3 for each virus. Images of cells were taken 11 days after placing the cells under puromycin selection, showing ablation of RFP expression in target cells.

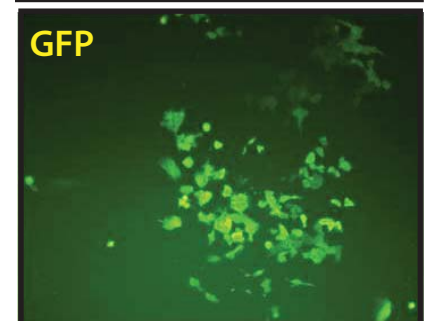
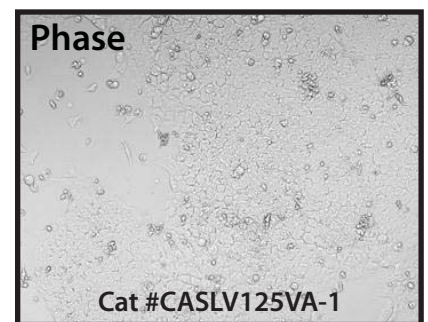
### MSCV-hspCas9-T2A-Puro (Cat# CASLV125VA-1) EF1-Blasticidin-H1-gRNA (Cat# CASLV500PA-B)



## Highlights

- High-titer, pre-packaged Lenti-Cas9 virus is ready for transduction
- Genome editing and engineering of difficult-to-transfect cell lines
- In vivo engineering of model organisms
- Make stable Cas9 editing cell lines
- Genome-wide functional screening

## Stem cell genome engineering with Lenti-Cas9!



ABOVE: Fluorescence image of Human iPSC cell line infected with pseudoviral particles of MSCV-hspCas9-EF1-copGFP at MOI = 60. Image was taken 6 days after virus transduction.

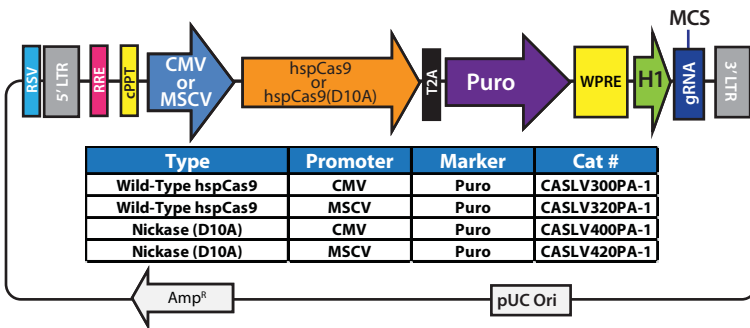
## CRISPR/Cas9 All-in-one and Two-Vector Lentivector Formats

SBI offers lentiviral constructs in two formats:

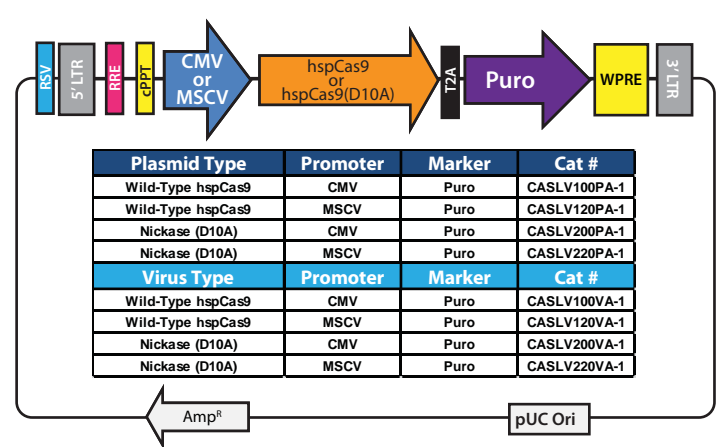
- 1) An "all-in-one" format expressing Cas9 and gRNA from a single vector
- 2) A two vector system with separate Cas9 and gRNA expression vectors

All of the Cas9 lentivector constructs express human-codon optimized Cas9 wild-type nuclease or mutant nickase, while the gRNA cloning/expression lentivector constructs contain a pre-made tracrRNA scaffold with gRNA cloning sites driven by your choice of H1 or U6 Pol-III promoters for robust expression in a wide range of cells. The system is designed to accommodate flexible targeting of any genomic loci in the form of N20NGG; however, other gRNA formats (e.g. N17-18NGG) can be utilized as well. The all-in-one lentiviral constructs are provided pre-linearized for cloning of guide RNAs into the MCS within the gRNA scaffold cassette. A single sales unit contains enough reagents to perform up to 10 ligation reactions (i.e. cloning of 10 individual gRNAs).

### All-in-one Lenti-Cas9 plus gRNA Formats

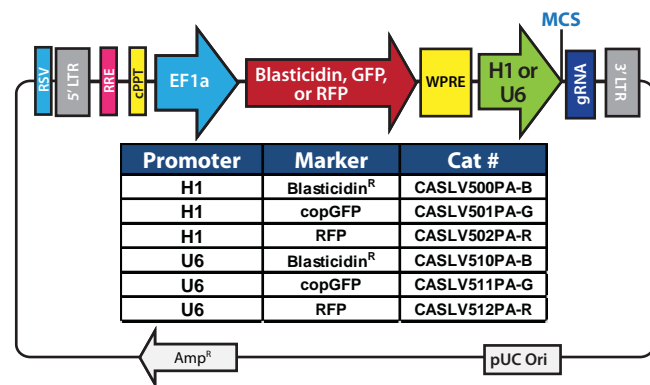


### Two Vector Lenti-Cas9-Puro Formats



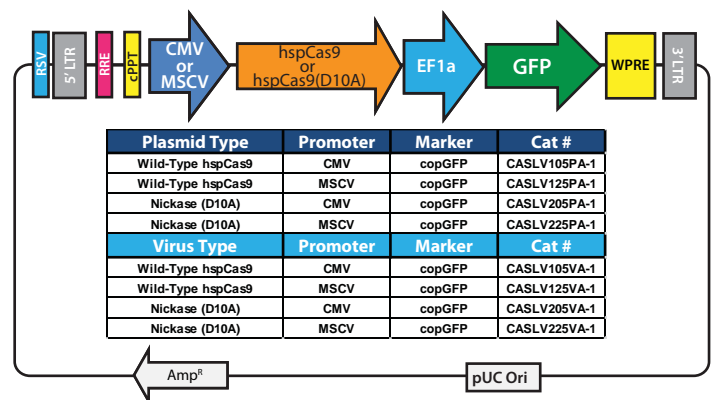
### gRNA Cloning and Expression Lentivectors

gRNA cloning and expression lentivectors are provided in a pre-linearized format for ease of cloning gRNAs. These lentivectors can be propagated when a gRNA insert has been cloned into the MCS. High-titer lentivirus can then be packaged to transduce target cells to express the gRNA to direct CRISPR/Cas9 to the genomic locus of interest. View gRNA lentivector format options below.



### WT Cas9 and Nickase GFP Lentivirus and Vectors

The WT Cas9 and Nickase dual promoter EF1-GFP format lentiviral constructs are provided in plasmid form or as pre-packaged lentivirus, ready to transduce your target cells (>10<sup>7</sup> IFUs/ml, >10<sup>6</sup> infectious units, 2 x 25ul aliquots) for the lentivector formats below.



## We Also Offer Custom Services - Have SBI Build a Custom Cas9 SmartNuclease Lentivector.

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.