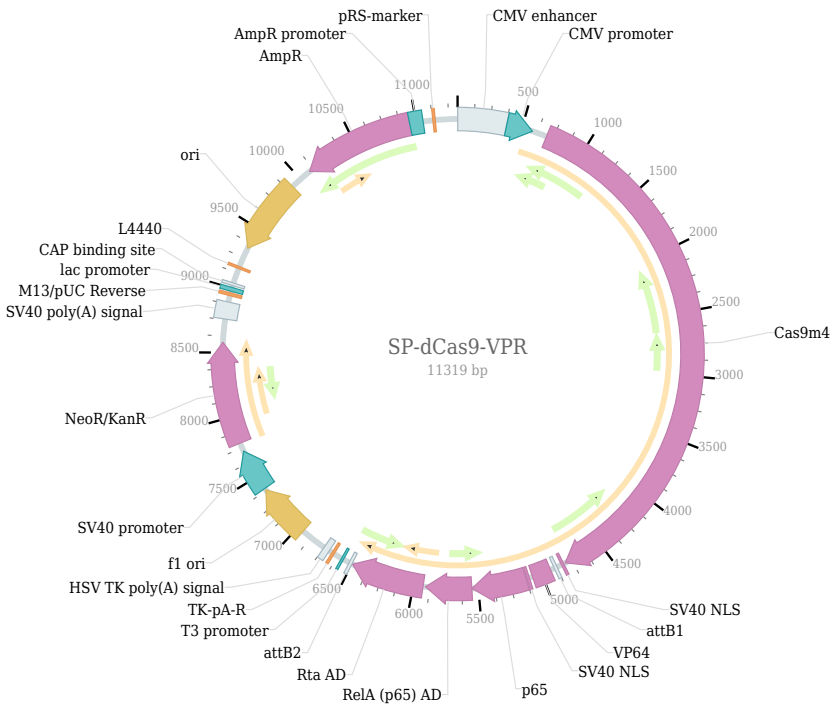
SP-dCas9-VPR

Vector ID	V007193
Antibiotic Resistance	Ampicillin
Length	11319 bp
Vector Type	Mammalian Expression, CRISPR, Synthetic Biology

Product Information

Replication Origin	ori
Selection Marker	Neomycin (select with G418)
Promoter	CMV
Cloning Method	Gateway Cloning
5' Primer	CMV-F
Growth Strain(s)	DH10B
Growth Temperature	37℃
Comment	SP-dCas9-VPR is a single-component CRISPRa plasmid with nuclease-dead S. pyogenes Cas9 fused to VPR, a tripartite activator ordered VP64-p65-Rta: VP64 recruits basal transcription machinery, p65 boosts NF-κB-mediated transcription, and Rta supplies potent viral transactivation activity. It outperforms dCas9-VP64 by 22–3200 folds in activating human endogenous genes and supports simultaneous multiplex gene upregulation. This VPR fusion module works in mammalian cells, yeast and Drosophila when paired with species-specific expression vectors. The mammalian backbone of this construct efficiently triggers human iPSC neuronal differentiation via overexpressing NEUROD1 or NGN2. Unlike multi-component CRISPRa systems such as SAM, it relies on one effector plasmid to streamline cell engineering for gain-of-function research.

Vector Map



Plasmid Resuspension Protocol

1. Centrifuge at 5,000×g for 5 min.
2. Carefully open the tube and add sterile water to dissolve the DNA: add 20 µl for 5 µg plasmid, and 100 µl for 100 µg plasmid.
3. Close the tube and incubate for 10 minutes at room temperature.
4. Briefly vortex the tube and then do a quick spin to concentrate the liquid at the bottom. Speed is less than 5000×g.
5. Store the plasmid at -20 ℃.