

Control CRISPR Activation Plasmid: sc-437275

BACKGROUND

The Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) and CRISPR-associated protein (Cas9) system is an adaptive immune response defense mechanism used by archaea and bacteria for the degradation of foreign genetic material. This mechanism can be repurposed for other functions, including genomic engineering for mammalian systems, such as gene knock-out (KO) (1,2) and gene activation (3-6). CRISPR Activation Plasmid products enable the identification and upregulation of specific genes by utilizing a D10A and N863A deactivated Cas9 (dCas9) nuclease fused to a VP64 activation domain, in conjunction with sgRNA (MS2), a target-specific sgRNA engineered to bind the MS2-P65-HSF1 fusion protein (6). This synergistic activation mediator (SAM) transcription activation system provides a robust system to maximize the activation of endogenous gene expression (6).

REFERENCES

1. Cong, L., et al. 2013. Multiplex genome engineering using CRISPR/Cas systems. *Science* 339: 819-823.
2. Mali, P., et al. 2013. RNA-guided human genome engineering via Cas9. *Science* 339: 823-826.
3. Maeder, M.L., et al. 2013. CRISPR RNA-guided activation of endogenous human genes. *Nat. Methods* 10: 977-979.
4. Hsu, P., et al. 2014. Development and applications of CRISPR-Cas9 for genome editing. *Cell* 157: 1262-1278.
5. Van der Oost, J., et al. 2014. Unraveling the structural and mechanistic basis of CRISPR-Cas systems. *Nat. Rev. Microbiol.* 7: 479-492.
6. Konermann, S., et al. 2014. Genome-scale transcriptional activation by an engineered CRISPR-Cas9 complex. *Nature*. E-published.

PRODUCT

Control CRISPR Activation Plasmid is a SAM transcription activation system designed to be a negative control for CRISPR/dCas9 Activation Plasmids.

Control CRISPR Activation Plasmid contains the following SAM activation elements: a deactivated Cas9 (dCas9) nuclease (D10A and N863A) fused to the transactivation domain VP64, an MS2-p65-HSF1 fusion protein, and a non-specific 20 nt guide RNA. It also contains the blasticidin, hygromycin and puromycin resistance genes. The resulting SAM complex does not recognize nor bind any specific sequence within the genomic DNA, and does not activate transcription of any specific gene. Each vial contains a total of 200 µl of transduction-ready, high-titer Control CRISPR Activation Plasmid.

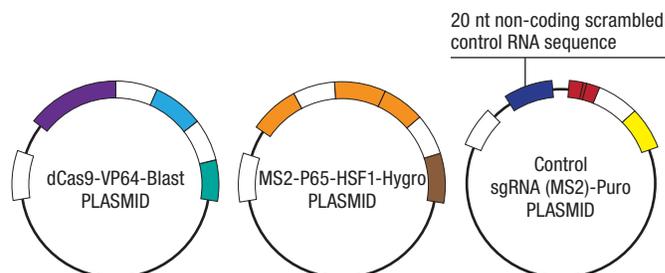
STORAGE AND RESUSPENSION

Store lyophilized DNA at 4° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at 4° C for short-term storage or -20° C for long-term storage. Avoid repeated freeze thaw cycles.

Resuspend lyophilized plasmid DNA in 200 µl of the provided ultrapure, sterile, DNase-free water. Resuspension of the plasmid DNA makes a 0.1 µg/µl solution in a 10 mM TRIS EDTA, 1 mM EDTA buffered solution.

APPLICATIONS

Control CRISPR Activation Plasmid is recommended as a negative control for evaluating the efficacy and specificity of target-specific CRISPR Activation Plasmids. Suitable as a control for all ACT and ACT-2 products.



SUPPORT REAGENTS

For optimal reaction efficiency with CRISPR Activation Plasmids, Santa Cruz Biotechnology's UltraCruz® Transfection Reagent: sc-395739 (0.2 ml) and Plasmid Transfection Medium: sc-108062 (20 ml) are recommended. Hygromycin B solution: sc-29067 (1 g), Blasticidin S HCl solution: sc-495389 (1 ml) and Puromycin dihydrochloride: sc-108071 (25 mg) are recommended for selection.

RESEARCH USE

The Control CRISPR Activation Plasmid is considered a "Licensed Product" and is to be used in accordance with the Limited License stated on www.scbt.com/limitedlicense.

The purchase of this product conveys to the buyer the nontransferable right to use the purchased amount of the product and all replicates and derivatives for research purposes conducted by the buyer in his laboratory only (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party, or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.