

## PP2A-A $\alpha$ siRNA (h): sc-44033

### BACKGROUND

In eukaryotes, the phosphorylation and dephosphorylation of proteins on serine and threonine residues is an essential means of regulating a broad range of cellular functions, including division, homeostasis and apoptosis. A group of proteins that are intimately involved in this process are the protein phosphatases. In general, the protein phosphatase (PP) holoenzyme is a trimeric complex composed of a regulatory subunit, a variable subunit, and a catalytic subunit. Four major families of protein phosphatase catalytic subunits have been identified, designated PP1, PP2A, PP2B (calcineurin) and PP2C. An additional protein phosphatase catalytic subunit, PPX (also known as PP4), is a putative member of a novel PP family. The PP2A family comprises subfamily members PP2A $\alpha$  and PP2A $\beta$ . The PP2A catalytic subunit associates with a variety of regulatory subunits. Regulatory subunits include PP2A-A $\alpha$  and -A $\beta$ , PP2A-B $\alpha$  and -B $\beta$ , PP2A-C $\alpha$  and -C $\beta$ , and PP2A-B56- $\alpha$  and -B56- $\beta$ .

### REFERENCES

1. Ueki, K., et al. 1992. Structure and expression of two isoforms of the murine calmodulin-dependent protein phosphatase regulatory subunit (calcineurin B). *Biochem. Biophys. Res. Commun.* 187: 537-543.
2. Cohen, P.T. 1993. Important roles for novel protein phosphatases dephosphorylating serine and threonine residues. *Biochem. Soc. Trans.* 21: 884-888.
3. Hendrix, P., et al. 1993. Structure and expression of a 72-kDa regulatory subunit of protein phosphatase 2A. Evidence for different size forms produced by alternative splicing. *J. Biol. Chem.* 268: 15267-15276.
4. Mumby, M.C., et al. 1993. Protein serine/threonine phosphatases: structure, regulation, and functions in cell growth. *Physiol. Rev.* 73: 673-699.

### CHROMOSOMAL LOCATION

Genetic locus: PPP2R1A (human) mapping to 19q13.41.

### PRODUCT

PP2A-A $\alpha$  siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PP2A-A $\alpha$  shRNA Plasmid (h): sc-44033-SH and PP2A-A $\alpha$  shRNA (h) Lentiviral Particles: sc-44033-V as alternate gene silencing products.

For independent verification of PP2A-A $\alpha$  (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-44033A, sc-44033B and sc-44033C.

### STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

### APPLICATIONS

PP2A-A $\alpha$  siRNA (h) is recommended for the inhibition of PP2A-A $\alpha$  expression in human cells.

### SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10  $\mu$ M in 66  $\mu$ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

### GENE EXPRESSION MONITORING

PP2A-A $\alpha$  (6G3): sc-56954 is recommended as a control antibody for monitoring of PP2A-A $\alpha$  gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

### RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PP2A-A $\alpha$  gene expression knockdown using RT-PCR Primer: PP2A-A $\alpha$  (h)-PR: sc-44033-PR (20  $\mu$ l, 554 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

### SELECT PRODUCT CITATIONS

1. Clarke, C.J., et al. 2011. Neutral sphingomyelinase-2 mediates growth arrest by retinoic acid through modulation of ribosomal S6 kinase. *J. Biol. Chem.* 286: 21565-21576.
2. Jin Jung, K., et al. 2013. Oxidative stress induces inactivation of protein phosphatase 2A, promoting proinflammatory NF $\kappa$ B in aged rat kidney. *Free Radic. Biol. Med.* 61: 206-217.
3. Stanevich, V., et al. 2014. Mechanisms of the scaffold subunit in facilitating protein phosphatase 2A methylation. *PLoS ONE* 9: e86955.
4. Kawashima, I. and Kirito, K. 2016. Metformin inhibits JAK2V617F activity in MPN cells by activating AMPK and PP2A complexes containing the B56 $\alpha$  subunit. *Exp. Hematol.* 44: 1156-1165.e4.
5. Son, S., et al. 2022. Autophagosome-lysosome fusion is facilitated by plectin-stabilized actin and keratin 8 during macroautophagic process. *Cell. Mol. Life Sci.* 79: 95.

### RESEARCH USE

For research use only, not for use in diagnostic procedures.

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.