SANTA CRUZ BIOTECHNOLOGY, INC.

Akt1/2 siRNA (m): sc-43610

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The serine/threonine kinase Akt family contains several members, including Akt1 (also designated PKB or RacPK), Akt2 (also designated PKBβ or RacPK-βb) and Akt3 (also designated PKBγ or thyoma viral proto-oncogene 3), which exhibit sequence homology with the protein kinase A and C families and are encoded by the c-Akt proto-oncogene. All members of the Akt family have a pleckstrin homology domain. Akt1 and Akt2 are activated by PDGF stimulation. Activation is dependent on PDGFR-β Tyr residues 740 and 751, which bind the subunit of the phosphatidylinositol 3-kinase (PI 3-kinase) complex. Activation of Akt1 by Insulin or Insulin-growth factor-1 (IGF-1) results in phosphorylation of both Thr 308 and Ser 473. Phosphorylation of both residues is important to generate a high level of Akt1 activity. The phosphorylation of Thr 308 is not dependent on phosphorylation of Ser 473 *in vivo*. Thus, Akt proteins become phosphorylated and activated in Insulin/IGF-1-stimulated cells by an upstream kinase(s). The activation of Akt1 and Akt2 is inhibited by the PI kinase inhibitor wortmannin, suggesting that the protein signals downstream of the PI kinases.

REFERENCES

1. Burgering, B.M., et al. 1995. Protein kinase B (c-Akt) in phosphatidylinositol-3-OH kinase signal transduction. Nature 376: 599-602.
2. Datta, K., et al. 1995. AH/PH domain-mediated interaction between Akt molecules and its potential role in Akt regulation. Mol. Cell. Biol. 15: 2304-2310.

CHROMOSOMAL LOCATION

Genetic locus: Akt1 (mouse) mapping to 12 F1, Akt2 (mouse) mapping to 7 A3.

PRODUCT

Akt1/2 siRNA (m) 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Akt1/2 shRNA Plasmid (m): sc-43610-SH and Akt1/2 shRNA (m) Lentiviral Particles: sc-43610-V as alternate gene silencing products.

For independent verification of Akt1/2 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-43610A, sc-43610B and sc-43610C.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Akt1/2 siRNA (m) is recommended for the inhibition of Akt1/2 expression in mouse 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 µM in 66 µl. 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

Akt1 (B-1): sc-5298 is recommended as a control antibody for monitoring of Akt1/2 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).

SELECT PRODUCT CITATIONS

1. Fernandes, M.S., et al. 2009. Bcr-Abl promotes the frequency of mutagenic single-strand annealing DNA repair. Blood 114: 1813-1819.
2. Than, A., et al. 2013. Control of adipogenesis by the autocrine interplays between angiotensin 1-7/Mas receptor and Angiotensin II/AT_1 receptor signaling pathways. J. Biol. Chem. 288: 15520-15531.
3. Dajas-Bailador, F., et al. 2014. Regulation of axon growth by the JIP1-Akt axis. J. Cell Sci. 127: 230-239.
4. Tsuchiya, A., et al 2014. PI3 kinase directly phosphorylates Akt1/2 at Ser473/474 in the Insulin signal transduction pathway. J. Endocrinol. 220: 49-59.
5. Than, A., et al. 2015. Apelin enhances brown adipogenesis and browning of white adipocytes. J. Biol. Chem. 290: 14679-14691.
6. Bridgeman, B.B., et al. 2016. Inhibition of mTOR by apigenin in UVB-irradiated keratinocytes: a new implication of skin cancer prevention. Cell. Signal. 28: 460-468.
7. Shen, M., et al. 2017. Protective mechanism of FSH against oxidative damage in mouse ovarian granulosa cells by repressing autophagy. Autophagy 13: 1364-1385.
8. Yao, X., et al. 2017. Solanesol induces the expression of heme oxygenase-1 via p38 and Akt and suppresses the production of proinflammatory cytokines in RAW 264.7 cells. Food Funct. 8: 132-141.
9. Nishizaki, T. 2018. Dioleoylphosphoethanolamine retains cell surface GLUT4 by inhibiting PKCα-driven internalization. Cell. Physiol. Biochem. 46: 1985-1998.
10. Zhang, L.X., et al. 2020. *Ex vivo* IL-15 replenishment augments bone marrow precursor cell-mediated adaptive immunity via PI3K-Akt pathway. J. Leukoc. Biol. 108: 177-188.

RESEARCH USE

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