SANTA CRUZ BIOTECHNOLOGY, INC.

FKBP12 siRNA (h): sc-35378

BACKGROUND

Immunophilins are a highly conserved family of *cis-trans* peptidyl-prolyl isomerases which bind to and mediate the effects of immunosuppressive drugs such as Cyclosporin, FK506 and rapamycin. The prototypic member of the family, FKBP12, was originally identified as a target of FK506 and rapamycin activity. FKBP12 is an abundant, evolutionarily conserved cytoplasmic protein. Although the molecular role of FKBP12 activity is not well understood, the protein has been implicated as a regulator of diverse array of cellular processes including T cell activation, entry into the cell cycle and intracellular calcium release. Interestingly, FKBP12 has been shown to associate with the intracellular cytoplasmic domain of the type I TGFβ receptor. This association is constitutive and not dependent on the activation of the receptor.

REFERENCES

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2. Brown, E.J., et al. 1995. Control of p70 s6 kinase by kinase activity of FRAP *in vivo*. Nature 377: 441-446.
3. Cardenas, M.E., et al. 1995. Molecular mechanisms of immunosuppression by cyclosporine, FK506, and rapamycin. Curr. Opin. Nephrol. Hypertens. 4: 472-477.
4. Fruman, D.A., et al. 1995. The complex of FK506-binding protein 12 and FK506 inhibits calcineurin phosphatase activity and IgE activation-induced cytokine transcripts, but not exocytosis, in mouse mast cells. J. Immunol. 154: 1846-1851.
5. Choi, J., et al. 1996. Structure of the FKBP12-rapamycin complex interacting with the binding domain of human FRAP. Science 273: 239-242.
6. Marks, A.R. 1996. Cellular functions of immunophilins. Physiol. Rev. 76: 631-649.
7. Wang, T., et al. 1996. The immunophilin FKBP12 functions as a common inhibitor of the TGFβ family type I receptors. Cell 86: 435-444.
8. Okadome, T., et al. 1996. Characterization of the interaction of FKBP12 with the transforming growth factor-β type I receptor *in vivo*. J. Biol. Chem. 271: 21687-21690.

CHROMOSOMAL LOCATION

Genetic locus: FKBP1A (human) mapping to 20p13.

PRODUCT

FKBP12 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see FKBP12 shRNA Plasmid (h): sc-35378-SH and FKBP12 shRNA (h) Lentiviral Particles: sc-35378-V as alternate gene silencing products.

For independent verification of FKBP12 (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-35378A, sc-35378B and sc-35378C.

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

FKBP12 siRNA (h) is recommended for the inhibition of FKBP12 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 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

FKBP12 (8): sc-135908 is recommended as a control antibody for monitoring of FKBP12 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 FKBP12 gene expression knockdown using RT-PCR Primer: FKBP12 (h)-PR: sc-35378-PR (20 µl, 434 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Singleton, P.A., et al. 2010. Methylnaltrexone potentiates the anti-angiogenic effects of mTOR inhibitors. J. Angiogenes. Res. 2: 5.
2. Hirsch, H.H., et al. 2016. BK polyomavirus replication in renal tubular epithelial cells is inhibited by sirolimus, but activated by tacrolimus through a pathway involving FKBP-12. Am. J. Transplant. 16: 821-832.
3. Liu, T., et al. 2017. FKBP12 enhances sensitivity to chemotherapy-induced cancer cell apoptosis by inhibiting MDM2. Oncogene 36: 1678-1686.

RESEARCH USE

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