SANTA CRUZ BIOTECHNOLOGY, INC.

USP12 siRNA (h): sc-76813

BACKGROUND

The ubiquitin (Ub) pathway involves three sequential enzymatic steps that facilitate the conjugation of Ub and Ub-like molecules to specific protein substrates. Through the use of a wide range of enzymes that can add or remove ubiquitin, the Ub pathway controls many intracellular processes such as signal transduction, transcriptional activation and cell cycle progression. USP12 (ubiquitin specific peptidase 12), also known as UBH1 or USP12L1, is a 370 amino acid protein belonging to the peptidase C19 family and the USP12/USP46 subfamily. Considered a deubiquitinating enzyme, it is suggested that USP12 has almost no deubiquitinating activity by itself and requires the interaction with WDR48 to have high activity. The gene encoding USP12 maps to human chromosome 13, which houses over 400 genes, such as BRCA2 and RB1, and comprises nearly 4% of the human genome.

REFERENCES

1. Hansen-Hagge, T.E., Janssen, J.W., Hameister, H., Papa, F.R., Zechner, U., Seriu, T., Jauch, A., Becke, D., Hochstrasser, M. and Bartram, C.R. 1998. An evolutionarily conserved gene on human chromosome 5q33-q34, UBH1, encodes a novel deubiquitinating enzyme. Genomics 49: 411-418.
2. Chung, C.H. and Baek, S.H. 1999. Deubiquitinating enzymes: their diversity and emerging roles. Biochem. Biophys. Res. Commun. 266: 633-640.
3. Smith, T.S. and Southan, C. 2000. Sequencing, tissue distribution and chromosomal assignment of a novel ubiquitin-specific protease USP23. Biochim. Biophys. Acta 1490: 184-188.
4. Li, Z., Wang, D., Na, X., Schoen, S.R., Messing, E.M. and Wu, G. 2002. Identification of a deubiquitinating enzyme subfamily as substrates of the von Hippel-Lindau tumor suppressor. Biochem. Biophys. Res. Commun. 294: 700-709.
5. Baek, K.H., Park, K.H., Kim, Y.S., Kim, M.S. and Choi, H.K. 2002. Molecular cloning and complete cDNA sequence of UBH1 in mouse testis. DNA Seq. 13: 145-148.
6. Li, Z., Na, X., Wang, D., Schoen, S.R., Messing, E.M. and Wu, G. 2002. Ubiquitination of a novel deubiquitinating enzyme requires direct binding to von Hippel-Lindau tumor suppressor protein. J. Biol. Chem. 277: 4656-4662.
7. Quesada, V., Díaz-Perales, A., Gutierrez-Fernández, A., Garabaya, C., Cal, S. and López-Otín, C. 2004. Cloning and enzymatic analysis of 22 novel human ubiquitin-specific proteases. Biochem. Biophys. Res. Commun. 314: 54-62.
8. Hicke, L., Schubert, H.L. and Hill, C.P. 2005. Ubiquitin-binding domains. Nat. Rev. Mol. Cell Biol. 6: 610-621.
9. Cohn, M.A., Kee, Y., Haas, W., Gygi, S.P. and D'Andrea, A.D. 2009. UAF1 is a subunit of multiple deubiquitinating enzyme complexes. J. Biol. Chem. 284: 5343-5351.

CHROMOSOMAL LOCATION

Genetic locus: USP12 (human) mapping to 13q12.13.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

USP12 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 USP12 shRNA Plasmid (h): sc-76813-SH and USP12 shRNA (h) Lentiviral Particles: sc-76813-V as alternate gene silencing products.

For independent verification of USP12 (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-76813A, sc-76813B and sc-76813C.

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

USP12 siRNA (h) is recommended for the inhibition of USP12 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor USP12 gene expression knockdown using RT-PCR Primer: USP12 (h)-PR: sc-76813-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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