SANTA CRUZ BIOTECHNOLOGY, INC.

eIF2A siRNA (h): sc-78173

BACKGROUND

eIF2A (eukaryotic translation initiation factor 2A), also known as CDA02, MSTP004 or MSTP089, is a 585 amino acid protein that contains three WD repeats. Expressed ubiquitously with highest expression in heart, brain, pancreas and placenta, eIF2A functions as a translation initiation factor that binds Met-tRNA and directs it to 40S ribosomal subunits. Present in the early steps of protein synthesis, eIF2A controls the binding of Met-tRNA to 40S ribosomal subunits in a codon-dependent manner, in contrast to the eIF2 complex which accomplishes the same task in a GTP-dependent manner. In addition to its role in transcription initiation, eIF2A may also act to negatively regulate the expression of specific proteins, suggesting a possible role as a transcriptional repressor. eIF2A exists as two isoforms due to alternative splicing events.

REFERENCES

1. Merrick, W.C. 1992. Mechanism and regulation of eukaryotic protein synthesis. Microbiol. Rev. 56: 291-315.
2. Zoll, W.L., Horton, L.E., Komar, A.A., Hensold, J.O. and Merrick, W.C. 2002. Characterization of mammalian eIF2A and identification of the yeast homolog. J. Biol. Chem. 277: 37079-37087.
3. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 609234. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Komar, A.A., Gross, S.R., Barth-Baus, D., Strachan, R., Hensold, J.O., Goss Kinzy, T. and Merrick, W.C. 2005. Novel characteristics of the biological properties of the yeast *Saccharomyces cerevisiae* eukaryotic initiation factor 2A. J. Biol. Chem. 280: 15601-15611.
5. Gorrini, C., Loreni, F., Gandin, V., Sala, L.A., Sonenberg, N., Marchisio, P.C. and Biffo, S. 2005. Fibronectin controls cap-dependent translation through β1 integrin and eukaryotic initiation factors 4 and 2 coordinated pathways. Proc. Natl. Acad. Sci. USA 102: 9200-9205.
6. Scheuner, D., Patel, R., Wang, F., Lee, K., Kumar, K., Wu, J., Nilsson, A., Karin, M. and Kaufman, R.J. 2006. Double-stranded RNA-dependent protein kinase phosphorylation of the α-subunit of eukaryotic translation initiation factor 2 mediates apoptosis. J. Biol. Chem. 281: 21458-21468.

CHROMOSOMAL LOCATION

Genetic locus: EIF2A (human) mapping to 3q25.1.

PRODUCT

eIF2A 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 eIF2A shRNA Plasmid (h): sc-78173-SH and eIF2A shRNA (h) Lentiviral Particles: sc-78173-V as alternate gene silencing products.

For independent verification of eIF2A (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-78173A, sc-78173B and sc-78173C.

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

eIF2A siRNA (h) is recommended for the inhibition of eIF2A 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

eIF2A (3A7A8): sc-517214 is recommended as a control antibody for monitoring of eIF2A 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 eIF2A gene expression knockdown using RT-PCR Primer: eIF2A (h)-PR: sc-78173-PR (20 µl, 483 bp). 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.

PROTOCOLS

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