SANTA CRUZ BIOTECHNOLOGY, INC.

eIF4E siRNA (h): sc-35284

BACKGROUND

The initiation of protein synthesis in eukaryotic cells is regulated by interactions between protein initiation factors and RNA molecules. The eukaryotic initiation complex eIF4F exists *in vitro* as a trimeric complex of eIF4E, eIF4A and eIF4G. Together, the complex allows ribosome binding to mRNA by inducing the unwinding of mRNA secondary structures. eIF4E binds to the mRNA "cap" during an early step in the initiation of protein synthesis. eIF4A acts as an ATP-dependent RNA helicase. eIF4G acts as a bridge between eIF4E, eIF4A and the eIF3 complex.

CHROMOSOMAL LOCATION

Genetic locus: EIF4E (human) mapping to 4q23.

PRODUCT

eIF4E siRNA (h) is a target-specific 19-25 nt siRNA 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 eIF4E shRNA Plasmid (h): sc-35284-SH and eIF4E shRNA (h) Lentiviral Particles: sc-35284-V as alternate gene silencing products.

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

eIF4E siRNA (h) is recommended for the inhibition of eIF4E 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.

PROTOCOLS

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

GENE EXPRESSION MONITORING

eIF4E (P-2): sc-9976 is recommended as a control antibody for monitoring of eIF4E 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor eIF4E gene expression knockdown using RT-PCR Primer: eIF4E (h)-PR: sc-35284-PR (20 µl, 488 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yellen, P., et al. 2011. High-dose rapamycin induces apoptosis in human cancer cells by dissociating mTOR complex 1 and suppressing phosphorylation of 4E-BP1. Cell Cycle 10: 3948-3956.
2. Chatterjee, A., et al. 2015. Rapamycin-induced G_1 cell cycle arrest employs both TGF-β and Rb pathways. Cancer Lett. 360: 134-140.
3. Zhu, J., et al. 2015. Viral genome-linked protein (VPg) is essential for translation initiation of rabbit hemorrhagic disease virus (RHDV). PLoS ONE 10: e0143467.
4. Kumar, K., et al. 2016. Differential regulation of ZEB1 and EMT by MAPK-interacting protein kinases (MNK) and eIF4E in pancreatic cancer. Mol. Cancer Res. 14: 216-227.
5. Holditch, S.J., et al. 2019. The consequences of increased 4E-BP1 in polycystic kidney disease. Hum. Mol. Genet. 28: 4132-4147.
6. Zhan, Y., et al. 2020. Newcastle disease virus infection activates PI3K/Akt/mTOR and p38 MAPK/Mnk1 pathways to benefit viral mRNA translation via interaction of the viral NP protein and host eIF4E. PLoS Pathog. 16: e1008610.
7. Vittori, C., et al. 2022. Mechanisms of miR-3189-3p-mediated inhibition of c-Myc translation in triple negative breast cancer. Cancer Cell Int. 22: 204.

RESEARCH USE

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