

# eIF3 $\alpha$ siRNA (h): sc-40547

## BACKGROUND

The initiation of protein synthesis in eukaryotic cells is regulated by interactions between protein initiation factors and RNA molecules. Eukaryotic initiation factors (eIFs) are utilized in a sequence of reactions that lead to 80S ribosomal assembly and, ultimately, translation. The eukaryotic initiation factor-3 (eIF3) scaffolding structure is the largest of the eIF complexes and includes eIF3 $\alpha$ , eIF3 $\beta$ , eIF3 $\gamma$ , eIF3 $\delta$ , eIF3 $\epsilon$ , eIF3 $\zeta$ , eIF3 $\eta$  and eIF3 $\theta$ , all of which function to control the assembly of the 40S ribosomal subunit. Association of eIF3 proteins with the 40S ribosomal subunit stabilizes eIF2-GTP-Met-tRNA<sub>i</sub><sup>Met</sup> complex association and mRNA binding, and promotes dissociation of 80S ribosomes into 40S and 60S subunits, thereby promoting the assembly of the pre-initiation complex. Overexpression of eIF3 proteins is common in several cancers, suggesting a role for eIF3 proteins in tumorigenesis.

## REFERENCES

1. Valásek, L., et al. 2004. Interactions of eukaryotic translation initiation factor 3 (eIF3) subunit NIP1/c with eIF1 and eIF5 promote preinitiation complex assembly and regulate start codon selection. *Mol. Cell. Biol.* 24: 9437-9455.
2. Peterson, T.R., et al. 2005. eIF3: a connector of S6K1 to the translation preinitiation complex. *Mol. Cell* 20: 655-657.
3. Dong, Z., et al. 2006. Initiation factor eIF3 and regulation of mRNA translation, cell growth, and cancer. *Crit. Rev. Oncol. Hematol.* 59: 169-180.

## CHROMOSOMAL LOCATION

Genetic locus: EIF3J (human) mapping to 15q21.1.

## PRODUCT

eIF3 $\alpha$  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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see eIF3 $\alpha$  shRNA Plasmid (h): sc-40547-SH and eIF3 $\alpha$  shRNA (h) Lentiviral Particles: sc-40547-V as alternate gene silencing products.

For independent verification of eIF3 $\alpha$  (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-40547A, sc-40547B and sc-40547C.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

eIF3 $\alpha$  siRNA (h) is recommended for the inhibition of eIF3 $\alpha$  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  $\mu$ M in 66  $\mu$ l. 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

eIF3 $\alpha$  (H-1): sc-376651 is recommended as a control antibody for monitoring of eIF3 $\alpha$  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-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor eIF3 $\alpha$  gene expression knockdown using RT-PCR Primer: eIF3 $\alpha$  (h)-PR: sc-40547-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Liu, R.Y., et al. 2011. Role of eIF3 $\alpha$  in regulating cisplatin sensitivity and in translational control of nucleotide excision repair of nasopharyngeal carcinoma. *Oncogene* 30: 4814-4823.
2. Tsukimoto, A., et al. 2015. A new role for PGA1 in inhibiting hepatitis C virus-IRES-mediated translation by targeting viral translation factors. *Antiviral Res.* 117: 1-9.
3. Subramani, C., et al. 2018. Host-virus protein interaction network reveals the involvement of multiple host processes in the life cycle of hepatitis E virus. *mSystems* 3: e00135-17.
4. Dong, Z., et al. 2020. Translational regulation of Chk1 expression by eIF3 $\alpha$  via interaction with the RNA-binding protein HuR. *Biochem. J.* 477: 1939-1950.

## RESEARCH USE

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