SANTA CRUZ BIOTECHNOLOGY, INC.

Pin1 siRNA (h): sc-36230

BACKGROUND

NIMA was originally shown in *Aspergillus nidulans* to be necessary for entry into mitosis. NIMA-related mammalian proteins have since been identified as Nek1, Nek2 and Nek3. High expression of Nek1 is seen in male and female germ cell lines of mouse. Nek2 is the closest known mammalian relative to NIMA. Like NIMA, Nek2 expression peaks at the G_2 to M phase transition. Pin1 was originally identified as a NIMA-interacting protein. Pin1 is a peptidyl-prolyl *cis/trans* isomerase (PPIase), which specifically binds to phosphoserine-proline or phosphothreonine-proline bonds in mitotic phosphoproteins. While previously identified PPIases have been shown to be involved in protein folding, assembly and transport, Pin1 is the first PPIase to be identified as a required protein for cell viability.

REFERENCES

1. Osmani, S.A., et al. 1988. Mitotic induction and maintenance by overexpression of a G_2-specific gene that encodes a potential protein kinase. Cell 53: 237-244.
2. Letwin, K., et al. 1992. A mammalian dual specificity protein kinase, Nek1, is related to the NIMA cell cycle regulator and highly expressed in meiotic germ cells. EMBO J. 11: 3521-3531.
3. Schultz, S.J., et al. 1994. Cell cycle-dependent expression of Nek2, a novel human protein kinase related to the NIMA mitotic regulator of *Aspergillus nidulans*. Cell Growth Differ. 5: 625-635.

CHROMOSOMAL LOCATION

Genetic locus: PIN1 (human) mapping to 19p13.2.

PRODUCT

Pin1 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 Pin1 shRNA Plasmid (h): sc-36230-SH and Pin1 shRNA (h) Lentiviral Particles: sc-36230-V as alternate gene silencing products.

For independent verification of Pin1 (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-36230A, sc-36230B and sc-36230C.

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

Pin1 siRNA (h) is recommended for the inhibition of Pin1 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

Pin1 (G-8): sc-46660 is recommended as a control antibody for monitoring of Pin1 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 Pin1 gene expression knockdown using RT-PCR Primer: Pin1 (h)-PR: sc-36230-PR (20 µl, 369 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wiegand, S., et al. 2009. The rotamase Pin1 is up-regulated, hypophosphorylated and required for cell cycle progression in head and neck squamous cell carcinomas. Oral Oncol. 45: e140-e149.
3. Franciosa, G., et al. 2016. Prolyl-isomerase Pin1 controls Notch3 protein expression and regulates T-ALL progression. Oncogene 35: 4741-4751.
4. Liao, P., et al. 2017. Mutant p53 gains its function via c-Myc activation upon CDK4 phosphorylation at serine 249 and consequent Pin1 binding. Mol. Cell 68: 1134-1146.e6.
6. Choi, M.A., et al. 2020. The peptidyl prolyl isomerase, Pin1 induces angiogenesis through direct interaction with HIF-2α. Biochem. Biophys. Res. Commun. 533: 995-1003.
7. Saeidi, S., et al. 2022. Peptidyl-prolyl *cis-trans* isomerase NIMA-interacting 1 directly binds and stabilizes Nrf2 in breast cancer. FASEB J. 36: e22068.
8. Guillen-Quispe, Y.N., et al. 2023. Oxygen-independent stabilization of HIF-2α in breast cancer through direct interaction with peptidyl-prolyl *cis-trans* isomerase NIMA-interacting 1. Free Radic. Biol. Med. 207: 296-307.
7. Guillen-Quispe, Y.N., et al. 2024. Non-canonical function of prolyl hydroxylase domain 2 in breast cancer cell growth and progression: role of peptidyl-prolyl *cis-trans* isomerase NIMA-interacting 1. J. Cancer Prev. 29: 129-139.

RESEARCH USE

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