



## KIF4A siRNA (m): sc-60889

### BACKGROUND

The kinesin superfamily proteins (KIFs) are microtubule-dependent molecular motors that transport membranous organelles and protein complexes in a microtubule- and ATP-dependent manner. Cells use KIFs to tightly control the direction, destination and speed of transportation of a variety of important functional molecules, including mRNA. KIF4A functions as an essential chromosome-associated molecular motor involved in faithful chromosome segregation. It is found in the nucleoplasm during interphase and on condensed chromosome arms during mitosis. KIF4A accumulates in the mid-zone during late anaphase and on the cytokinetic ring during cytokinesis. KIF4 binds to and translocates PRC1, a spindle mid-zone-associated cyclin-dependent kinase that plays a role in cytokinesis. KIF4A may also interact with the condensin I and II complexes. Loss of KIF4A leads to chromosome hypercondensation, suggesting that it is necessary for retaining normal chromosome architecture.

### REFERENCES

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2. Miki, H., et al. 2001. All kinesin superfamily protein, KIF, genes in mouse and human. *Proc. Natl. Acad. Sci. USA* 98: 7004-7011.
3. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 300521. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
4. Kurasawa, Y., et al. 2004. Essential roles of KIF4 and its binding partner PRC1 in organized central spindle midzone formation. *EMBO J.* 23: 3237-3248.
5. Mazumdar, M., et al. 2004. Human chromokinesin KIF4A functions in chromosome condensation and segregation. *J. Cell Biol.* 166: 613-620.
6. Zhu, C. and Jiang, W. 2005. Cell cycle-dependent translocation of PRC1 on the spindle by KIF4 is essential for midzone formation and cytokinesis. *Proc. Natl. Acad. Sci. USA* 102: 343-348.
7. Zhu, C., et al. 2005. Functional analysis of human microtubule-based motor proteins, the kinesins and dyneins, in mitosis/cytokinesis using RNA interference. *Mol. Biol. Cell* 16: 3187-3199.
8. Gruneberg, U., et al. 2006. KIF14 and citron kinase act together to promote efficient cytokinesis. *J. Cell Biol.* 172: 363-372.

### CHROMOSOMAL LOCATION

Genetic locus: Kif4 (mouse) mapping to X C3.

### RESEARCH USE

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

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

### PRODUCT

KIF4A siRNA (m) 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 KIF4A shRNA Plasmid (m): sc-60889-SH and KIF4A shRNA (m) Lentiviral Particles: sc-60889-V as alternate gene silencing products.

For independent verification of KIF4A (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-60889A, sc-60889B and sc-60889C.

### 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

KIF4A siRNA (m) is recommended for the inhibition of KIF4A expression in mouse 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.

### RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor KIF4A gene expression knockdown using RT-PCR Primer: KIF4A (m)-PR: sc-60889-PR (20  $\mu$ l, 600 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.