



Product Information

Nek6, Active

Human, Recombinant, expressed in *E. coli*

Product Number **N 4662**

Storage Temperature: -70 °C

Synonyms: (Never in Mitosis Gene A-Related Kinase 6; NIMA-Related Kinase 6)

Product Description

Nek6, cloned in 1999 from human liver cDNA, is a serine/threonine kinase and a member of the Nek family of protein kinases that share an N-terminal catalytic domain related to the NIMA (never in mitosis, gene A) family.^{1,2} Nek6 is a nuclear and cytoplasmic kinase that is required for mitotic progression of human cells and is phosphorylated and activated during the M phase of the cell cycle.³ Inhibition of Nek6 arrests cells in the M phase and triggers apoptosis, suggesting that Nek6 is required for metaphase-anaphase transition. Nercc1/Nek9 binds to Nek6 and is likely to be responsible for the activation of Nek6 during mitosis representing a new signalling pathway that regulates mitotic progression.⁴

Nek6 is ubiquitously expressed with the highest expression found in the heart and skeletal muscle. Nek6 phosphorylates histones H1 and H3, but not casein, suggesting that, unlike other mammalian NIMA-related kinases, Nek6 is a mitotic histone kinase which regulates chromatin condensation in mammalian cells.⁵ Nek6 also phosphorylates p70 S6 kinase at Thr412 and other sites and activates it *in vitro* and *in vivo*, in a manner synergistic with PDK1.⁶ Kinase-inactive Nek6 interferes with insulin activation of p70 S6 kinase implicating Nek6 as a possible physiologic regulator of p70 S6 kinase.

The product is active recombinant, full-length human Nek6 containing an N-terminal GST tag. It is supplied at a concentration of approximately 100 µg/mL in 50 mM Tris-HCl, pH 7.5, 150 mM NaCl, 0.25 mM DTT, 0.1 mM EGTA and 30% glycerol.

Purity: ≥ 80% (SDS Page)

Molecular weight: ~58 kDa.

Specific Activity: ≥ 10 units/mg protein (Bradford). Please refer to the Certificate of Analysis for the lot-specific activity.

Unit definition: One unit will incorporate one nanomole of phosphate into myelin basic protein (MBP) per minute at 30 °C at pH 7.2 using a final concentration of 50 µM [³²P] ATP..

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation instructions

For maximum product recovery, after thawing, centrifuge the vial before removing the cap

Storage/Stability

Stable for at least 12 months when stored as undiluted stock at -70 °C. After initial thawing, store in smaller, working aliquots at -70 °C. Use the working aliquots immediately upon thawing. Avoid repeated freeze-thaw cycles to prevent denaturing of the protein. Do not store in a frost-free freezer.

References:

1. Li, M. Z. et al., Assignment of NEK6, a NIMA-related gene, to human chromosome 9q33.3-q34.11 by radiation hybrid mapping., *Cytogenet. Cell Genet.* **87**, 271-272 (1999).
2. Kandli M, et. al., Isolation and characterization of two evolutionarily conserved murine kinases (Nek6 and nek7) related to the fungal mitotic regulator., *NIMA Genomics.* **68**, 187-196 (2000).
3. Yin M. J., et. al., The serine/threonine kinase Nek6 is required for cell cycle progression through mitosis., *J. Biol. Chem.*, **278**, 52454-52460 (2003).
4. Roig J., et. al., Nercc1, a mammalian NIMA-family kinase, binds the Ran GTPase and regulates mitotic progression., *Genes Dev.*, **16**, 1640-1658 (2002).

5. Hashimoto Y., et al., Identification and characterization of Nek6 protein kinase, a potential human homolog of NIMA histone H3 kinase Biochem. Biophys. Res. Commun., **293**, 753-758 (2002).

6. Belham C, et al., Identification of the NIMA family kinases NEK6/7 as regulators of the p70 ribosomal S6 kinase. Curr. Biol., **11**, 1155-1167 (2001).

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