Technology
Biomyx
Innovation & Convenience for Life Sciences

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# hJNKK2 ProtéGene™ Set

**Catalog#** J1108
**Lot#** Labeled on vial

**Materials Provided**

1. pMEV2HA-JNKK2-WT (J1108a): 20μg in 40μl TE, 0.5mg/ml.
2. pMEV2HA-JNKK2-K149M (J1108b): 20μg in40 μl TE, 0.5mg/ml.
3. pMEV2HA-JNKK2-EE (J1108c): 20μg in 40μl TE, 0.5mg/ml.
4. pMEV2HA-JNKK2-AA (J1108d): 20μg in 40μl TE, 0.5mg/ml.
5. pMEV2HA-JNKK2-KMAA (J1108e): 20μg in 40μl TE, 0.5mg/ml.
6. Product Information Sheet.

***Note:*** *Individual plasmids can be ordered separately. Some plasmids are shipped as lyophilized pellet to maintain the stability and/or reducing shipping cost.*

**Receiving and Storage:**

If received in lyophilized form, add 40μl sterile DI water to the vial, mix thoroughly by vortex and then collect the contents by centrifuging the vials briefly in a microcentrifuge. If received in liquid form, spin the vials briefly in a microcentrifuge to collect the contents. Store the products at 2-8$^0$C if used immediately or, store at –20$^0$C for extended storage.

**Prokaryotic selection:**

The kanamycin-resistance gene (aminoglcoside 3' phospho-transferase) expression cassette in the plasmids confers Kanamycin resistance to bacteria cells. Bacterial cells transformed with the plasmids should be maintained and grown in media containing 25-50μg/ml Kanamycin (e.g.cat#LK-1100, Prepured LB Agar plates, Biomyx, San Diego, California).

**Eukaryotic selection:**

The neomycin resistance gene, driven by SV40 early promoter, confers G418 resistance to eukaryotic cells. Stable mammalian cell lines can be selected with G418.

**Description of human JNKK2 and mutants**

Mitogen-activated protein kinases (MAPKs) cascade relays extracellular signals from cell membrane to the nucleus to induce intracellular responses and to regulate many aspects of cell physiology. These cascades, including JNK, ERK and p38 pathways, consist of distinct members of regulatory enzymes that serially activate one another in response to growth factors, cytokines and other mitogenic stimuli, leading to (in)activation of transcription factors. Like ERK1/2 and p38, the JNK activation requires dual phosphorylation on tyrosine and threonine residues within a conserved TPY motif. Activated JNKK1/2 can preferably phosphorylate and activate JNKs, with JNKK2 more specific to JNK. Please refer to the Selected References section for more information, or the Web Resources section for in depth references.

**Molecular Features of the inserts:**

Gene: *Homo sapiens mitogen-activated protein kinase kinase 7 (MAP2K7), (Nickname JNKK2)*
GenBank Reference Sequence: NM_145185
5'-Cloning Site: Bam HI
5'-Junction Sequence: 5'… ggatcc ATG JNKK2…3'
3'-Cloning Site: Kpn I
3'-Junction Sequence: 5'… JNKK2 ggtacc TGA …-3'

**Human JNKK2 Nucleotide and Protein Sequence**

*(1206 bps endoding 401 amino acid residues, with mutation locations marked in red & underlined. )*

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   1  ATGGCGGCGT CCTCCCTGGA ACAGAAGCTG TCCCGCCTGG AAGCAAAGCT GAAGCAGGAG
        M  A  A   S  S  L   E  Q  K  L   S  R  L   E  A  K   L  K  Q  E
  61  AACCGGGAGG CCCGGCGGAG GATCGACCTC AACCTGGATA TCAGCCCCCA GCGGCCCAGG
        N  R  E   A  R  R   R  I  D  L   N  L  D   I  S  P   Q  R  P  R
 121  CCCACCCTGC AGCTCCCGCT GGCCAACGAT GGGGGCAGCC GCTCGCCATC CTCAGAGAGC
        P  T  L   Q  L  P   L  A  N  D   G  G  S   R  S  P   S  S  E  S
 181  TCCCCGCAGC ACCCCACGCC CCCCGCCCGG CCCCGCCACA TGCTGGGGCT CCCGTCAACC
        S  P  Q   H  P  T   P  P  A  R   P  R  H   M  L  G   L  P  S  T
 241  CTGTTCACAC CCCGCAGCAT GGAGAGCATT GAGATTGACC ACAAGCTGCA GGAGATCATG
        L  F  T   P  R  S   M  E  S  I   E  I  D   H  K  L   Q  E  I  M
 301  AAGCAGACGG GCTACCTGAC CATCGGGGGC CAGCGCTACC AGGCAGAAAT CAACGACCTG
        K  Q  T   G  Y  L   T  I  G  G   Q  R  Y   Q  A  E   I  N  D  L
 361  GAGAACTTGG GCGAGATGGG CAGCGGCACC TGCGGACCGG TGTGGAAGAT GCGCTTCCGG
        E  N  L   G  E  M   G  S  G  T   C  G  P   V  W  K   M  R  F  R
 421  AAGACCGGCC ACGTCATTGC CGTTAAGCAA ATGCGGCGAT CGGGGAACAA GGAGGAGAAC
        K  T  G   H  V  I   A  V  K  Q   M  R  R   S  G  N   K  E  E  N
 481  AAGCGCATCC TCATGGACCT GGATGTGGTG CTGAAGAGCC ACGACTGCCC CTACATCGTG
        K  R  I   L  M  D   L  D  V  V   L  K  S   H  D  C   P  Y  I  V
 541  CAGTGCTTTG GGACGTTCAT CACCAACACG GACGTCTTCA TCGCCATGGA GCTCATGGGC
        Q  C  F   G  T  F   I  T  N  T   D  V  F   I  A  M   E  L  M  G
 601  ACCTGCGCTG AGAAGCTCAA GAAGCGGATG CAGGGCCCCA TCCCCGAGCG CATTCTGGGC
        T  C  A   E  K  L   K  K  R  M   Q  G  P   I  P  E   R  I  L  G
 661  AAGATGACAG TGGCGATTGT GAAGGCGCTG TACTACCTGA AGGAGAAGCA CGGTGTCATC
        K  M  T   V  A  I   V  K  A  L   Y  Y  L   K  E  K   H  G  V  I
 721  CACCGCGACG TCAAGCCCTC CAACATCCTG CTGGACGAGC GGGGCCAGAT CAAGCTCTGC
        H  R  D   V  K  P   S  N  I  L   L  D  E   R  G  Q   I  K  L  C
 781  GACTTCGGCA TCAGCGGCCG CCTGGTGGAC TCCAAAGCCA AGACGCGGAG CGCCGGCTGT
        D  F  G   I  S  G   R  L  V  D   S  K  A   K  T  R   S  A  G  C
 841  GCCGCCTACA TGGCACCCGA GCGCATTGAC CCCCCAGACC CCACCAAGCC GGACTATGAC
        A  A  Y   M  A  P   E  R  I  D   P  P  D   P  T  K   P  D  Y  D
 901  ATCCGGGCCG ACGTATGGAG CCTGGGCATC TCGTTGGTGG AGCTGGCAAC AGGACAGTTT
        I  R  A   D  V  W   S  L  G  I   S  L  V   E  L  A   T  G  Q  F
 961  CCCTACAAGA ACTGCAAGAC GGACTTTGAG GTCCTCACCA AAGTCCTACA GGAAGAGCCC
        P  Y  K   N  C  K   T  D  F  E   V  L  T   K  V  L   Q  E  E  P
1021  CCGCTTCTGC CCGGACACAT GGGCTTCTCG GGGGACTTCC AGTCCTTCGT CAAAGACTGC
        P  L  L   P  G  H   M  G  F  S   G  D  F   Q  S  F   V  K  D  C
1081  CTTACTAAAG ATCACAGGAA GAGACCAAAG TATAATAAGC TACTTGAACA CAGCTTCATC
        L  T  K   D  H  R   K  R  P  K   Y  N  K   L  L  E   H  S  F  I
1141  AAGCGCTACG AGACGCTGGA GGTGGACGTG GCGTCCTGGT TCAAGGATGT CATGGCGAAG
        K  R  Y   E  T  L   E  V  D  V   A  S  W   F  K  D   V  M  A  K
1201  ACCTGA
        T  -
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**Mutations:**

| | |
|---|---|
| JNKK2-WT (J1108a): | No mutation |
| JNKK2-K149M (J1108b): | K149M: AAG→ATG |
| JNKK2-EE (J1108c): | S271E: TCC>GAG, T275E: ACG→GAG |
| JNKK2-AA (J1108d): | S271A: TCC→GCC, T275A: ACG→GCG |
| JNKK2-KMAA(J1108e): | K149M: AAG → ATG<br>S271A: TCC→GCC<br>T275A: ACG→GCG |

**Selected References:**

Lu X, Nemoto S and Lin A, Identification of c-jun NH(2)-terminal protein kinase (JNK)-activating kinase 2 as an activator of JNK but not p38. J Biol Chem 272:24751-24754, 1997

Wu Z et al, Molecular cloning and characterization of human JNKK2, a novel jun NH(2)-terminal kinase-specific kinase. Molec Cell Biol 17:7407-7416, 1997

Roux PP, Blenis J, ERK and p38 MAPK-activated protein kinases: a family of protein kinases with diverse biological functions. Microbiol Mol Biol Rev 68(2):320-344, 2004

Kyriakis JM and Avruch J, Mammalian mitogen-activated protein kinase signal transduction pathways activated by stress and inflammation. Physiol. Rev. 81(2) 807-869, 2001

**Web Resources:**

For sequence, references and a comprehensive description, please click the links below or copy and paste the link to your browser address bar:

http://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?db=nucleotide&val=24497520

http://www.ncbi.nlm.nih.gov/entrez/dispomim.cgi?id=603014