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Human P38γ ProtéGene™ Set

Catalog# P1072
Lot# Labeled on vial

Materials Provided

1. pMEV2HA-P38γ-WT (P1072a): 20μg in 40μl TE, 0.50mg/ml.
2. pMEV2HA-P38γ-K56M (P1072b): 20μg in 40 μl TE, 0.50 mg/ml.
3. pMEV2HA-P38γ-EE (P1072c): 20μg in 40μl TE, 0.50 mg/ml.
4. pMEV2HA-P38γ-AA (P1072d): 20μg in 40μl TE, 0.50 mg/ml.
5. Product Information Sheet.

Note: *Individual plasmids can be ordered separately. Some plasmids are shipped as lyophilized pellet.*

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, Pre-Poured 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 P38 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, and lead to activation or inactivation of transcription factors. Proinflammatory cytokine and microbial products activate p38 (SAPK2, MAPK12) gene regulating pathway and cause the expression of multiple cytokine genes including IL-1, IL-6 and TNF alpha. There're four known p38 isoforms (α, β, γ and δ) that share about 60% homology. Please refer to the reference section for key references and the links at the end of this document for further reading.

Molecular Features of the inserts:

Gene: *Homo sapiens mitogen-activated protein kinase 12 (MAPK12), (Nicknames: p38 gamma, p38r)*
GenBank Reference Sequence: NM_002969
5'-Cloning Site: Xho I
5'-Junction Sequence: 5'…GCTAGC CTC GAG **ATG** (P38G)..3'
3'-Cloning Site: Xba I
3'-Junction Sequence: 5'…ATG .(P38G). **TGA** TCTAGAGTC-3'

Human P38-γ Nucleotide and Protein Sequence

(1104 bps encoding 367 amino acid residues, with mutation locations marked in red)

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   1  ATGAGCTCTC CGCCGCCCGC CCGCAGTGGC TTTTACCGCC AGGAGGTGAC CAAGACGGCC
        m  s  s   p  p  p   a  r  s  g   f  y  r   q  e  v   t  k  t  a
  61  TGGGAGGTGC GCGCCGTGTA CCGGGACCTG CAGCCCGTGG GCTCGGGCGC CTACGGCGCG
        w  e  v   r  a  v   y  r  d  l   q  p  v   g  s  g   a  y  g  a
 121  GTGTGCTCGG CCGTGGACGG CCGCACCGGC GCTAAGGTGG CCATCAAGAA GCTGTATCGG
        v  c  s   a  v  d   g  r  t  g   a  k  v   a  i  k   k  l  y  r
 181  CCCTTCCAGT CCGAGCTGTT CGCCAAGCGC GCCTACCGCG AGCTGCGCCT GCTCAAGCAC
        p  f  q   s  e  l   f  a  k  r   a  y  r   e  l  r   l  l  k  h
 241  ATGCGCCACG AGAACGTGAT CGGGCTGCTG GACGTATTCA CTCCTGATGA GACCCTGGAT
        m  r  h   e  n  v   i  g  l  l   d  v  f   t  p  d   e  t  l  d
 301  GACTTCACGG ACTTTTACCT GGTGATGCCG TTCATGGGCA CCGACCTGGG CAAGCTCATG
        d  f  t   d  f  y   l  v  m  p   f  m  g   t  d  l   g  k  l  m
 361  AAACATGAGA AGCTAGGCGA GGACCGGATC CAGTTCCTCG TGTACCAGAT GCTGAAGGGG
        k  h  e   k  l  g   e  d  r  i   q  f  l   v  y  q   m  l  k  g
 421  CTGAGGTATA TCCACGCTGC CGGCATCATC CACAGAGACC TGAAGCCCGG CAACCTGGCT
        l  r  y   i  h  a   a  g  i  i   h  r  d   l  k  p   g  n  l  a
 481  GTGAACGAAG ACTGTGAGCT GAAGATCCTG GACTTCGGCC TGGCCAGGCA GGCAGACAGT
        v  n  e   d  c  e   l  k  i  l   d  f  g   l  a  r   q  a  d  s
 541  GAGATGACTG GGTACGTGGT GACCCGGTGG TACCGGGCTC CCGAGGTCAT CTTGAATTGG
        e  m  t   g  y  v   v  t  r  w   y  r  a   p  e  v   i  l  n  w
 601  ATGCGCTACA CGCAGACGGT GGACATCTGG TCTGTGGGCT GCATCATGGC GGAGATGATC
        m  r  y   t  q  t   v  d  i  w   s  v  g   c  i  m   a  e  m  i
 661  ACAGGCAAGA CGCTGTTCAA GGGCAGCGAC CACCTGGACC AGCTGAAGGA GATCATGAAG
        t  g  k   t  l  f   k  g  s  d   h  l  d   q  l  k   e  i  m  k
 721  GTGACGGGGA CGCCTCCGGC TGAGTTTGTG CAGCGGCTGC AGAGCGATGA GGCCAAGAAC
        v  t  g   t  p  p   a  e  f  v   q  r  l   q  s  d   e  a  k  n
 781  TACATGAAGG GCCTCCCCGA ATTGGAGAAG AAGGATTTTG CCTCTATCCT GACCAATGCA
        y  m  k   g  l  p   e  l  e  k   k  d  f   a  s  i   l  t  n  a
 841  AGCCCTCTGG CTGTGAACCT CCTGGAGAAG ATGCTGGTGC TGGACGCGGA GCAGCGGGTG
        s  p  l   a  v  n   l  l  e  k   m  l  v   l  d  a   e  q  r  v
 901  ACGGCAGGCG AGGCGCTGGC CCATCCCTAC TTCGAGTCCC TGCACGACAC GGAAGATGAG
        t  a  g   e  a  l   a  h  p  y   f  e  s   l  h  d   t  e  d  e
 961  CCCCAGGTCC AGAAGTATGA TGACTCCTTT GACGACGTTG ACCGCACACT GGATGAATGG
        p  q  v   q  k  y   d  d  s  f   d  d  v   d  r  t   l  d  e  w
1021  AAGCGTGTTA CTTACAAAGA GGTGCTCAGC TTCAAGCCTC CCCGGCAGCT GGGGGCCAGG
        k  r  v   t  y  k   e  v  l  s   f  k  p   p  r  q   l  g  a  r
1081  GTCTCCAAGG AGACGCCTCT GTGA
        v  s  k   e  t  p   l  -
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Mutations:

pMEV-P38-WT (P1072a): No mutation
pMEV-P38-K56M (P1072b): K56M: AAG > ATG
pMEV-P38-EE (P1072c): T183E: ACT > GAA, Y185E: TAC>GAA
pMEV-P38-AA (P1072d): T183A: ACT > GCT, Y185A: TAC>GCC

Selected References:

Li Z, et al, The primary structure of p38γ: A new member of p38 group of MAP kinase. Biochem Biophys Res Comm 228(2):334-340, 1996

Han J, et al, Molecular cloning of human p38 MAP kinase. Biochim Biophys Acta 1265(2-3):224-227, 1995

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

Saccani S, Pantano S and Natoli G, p38-dependent marking of inflammatory genes for increased NF-B recruitment. Nature Immunol 3:69-75, 2002

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/query.fcgi?cmd=Retrieve&db=Nucleotide&list_uids=48255969&dopt=GenBank
http://www.ncbi.nlm.nih.gov/entrez/dispomim.cgi?id=602399