Human RAC1 / MIG5 Protein (GST Tag)

Catalog Number: **10535-H09B**

General Information

Gene Name Synonym:

MIG5; p21-Rac1; Rac-1; TC-25

Protein Construction:

A DNA sequence encoding the mature form of human Rac1 isoform A (NP_008839.2) (Met 1-Cys 189) was expressed with the GST tag at the N-terminus.

Source: Human

Expression Host: Baculovirus-Insect Cells

QC Testing

Purity: > 95 % as determined by SDS-PAGE

Endotoxin:

< 1.0 EU per μg of the protein as determined by the LAL method

Stability:

Samples are stable for up to twelve months from date of receipt at -70 ℃

Predicted N terminal: Met

Molecular Mass:

The recombinant human RAC1/GST chimera consists of 414 amino acids and predicts a molecular mass of 47 kDa. It migrates as an approximately 44 kDa band in SDS-PAGE under reducing conditions.

Formulation:

Lyophilized from sterile PBS, pH 7.4

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

Usage Guide

Storage:

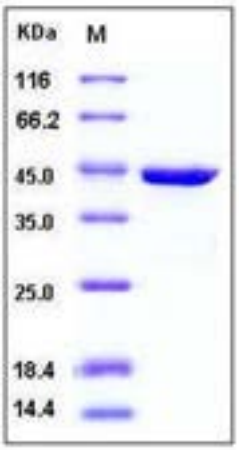
Store it under sterile conditions at -20℃ to -80℃ upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

Avoid repeated freeze-thaw cycles.

Reconstitution:

Detailed reconstitution instructions are sent along with the products.

SDS-PAGE:



Protein Description

RAC1 is a GTPase which belongs to the RAS superfamily of small GTP-binding proteins. Members of this superfamily appear to regulate a diverse array of cellular events, including the control of cell growth, cytoskeletal reorganization, and the activation of protein kinases. Two transcript variants encoding different isoforms have been found for RAC1 gene. RAC1 is a plasma membrane-associated small GTPase which cycles between active GTP-bound and inactive GDP-bound states. In its active state, binds to a variety of effector proteins to regulate cellular responses such as secretory processes, phagocytosis of apoptotic cells, epithelial cell polarization and growth-factor induced formation of membrane ruffles. RAC1 p21/rho GDI heterodimer is the active component of the cytosolic factor sigma 1, which is involved in stimulation of the NADPH oxidase activity in macrophage. RAC1 is essential for the SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly. RAC1's isoform B has an accelerated GEF-independent GDP/GTP exchange and an impaired GTP hydrolysis, which is restored partially by GTPase-activating proteins. It is able to bind to the GTPase-binding domain of PAK but not full-length PAK in a GTP-dependent manner, suggesting that the insertion does not completely abolish effector interaction. Stat3 is an important transcription factor that regulates both proinflammatory and anit-apoptotic pathways in the heart. It forms a multiprotein complex with RAC1 and PKC in an H/R-dependent manner by expression of constitutively active Rac1 mutant protein, and by RNA silencing of RAC1. Selective inhibition of PKC with calphostin C produces a marked suppression of Stat3 S727 phosphorylation. The association of Stat3 with Rax1 occurs predominantly at the cell membrane, but also inside the nucleus, and occurs through the binding of the coiled-coil domain of Stat3 to the 54 NH(2)-terminal residues of RAC1. Transfection with a peptide comprising the NH(2)-terminal 17 amino acid residues of RAC1-dependent signaling pathways resulting in physical association between Rac1 and Stat3 and the formation of a novel multiprotein complex with PKC.

References

1.Kogai T, *et al.*. (2012) Regulation of sodium iodide symporter gene expression by Rac1/p38β mitogen-activated protein kinase signaling pathway in MCF-7 breast cancer cells. J Biol Chem. 287(5):3292-300. 2.Osborn-Heaford HL, *et al.* (2012) Mitochondrial Rac1 GTPase import and electron transfer from cytochrome c are required for pulmonary fibrosis. J Biol Chem. 287(5):3301-12. 3.Chang MH, *et al.* (2012) Prognostic role of integrin β1, E-cadherin, and rac1 expression in small cell lung cancer. APMIS. 120(1):28-38.