

## RAC1 Protein, Human (sf9, GST)

Cat. No.:	HY-P74608
Synonyms:	Ras-related C3 botulinum toxin substrate 1; p21-Rac1; RAC1; TC25; MIG5
Species:	Human
Source:	Sf9 insect cells
Accession:	P63000 (M1-C189)
Gene ID:	5879
Molecular Weight:	Approximately 44 kDa

### PROPERTIES

Biological Activity	The enzyme activity of this recombinant protein is testing in progress, we cannot offer a guarantee yet.
Appearance	Solution
Formulation	Supplied as a 0.2 µm filtered solution of 50 mM, 100 mM NaCl, 1 mM GSH, 10% glycerol, pH 8.0.
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	N/A.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

### DESCRIPTION

#### Background

The RAC1 Protein, a plasma membrane-associated small GTPase, dynamically cycles between its active GTP-bound and inactive GDP-bound states, exerting regulatory control over a spectrum of cellular responses. In its active state, RAC1 binds to various effector proteins, modulating processes such as secretory functions, phagocytosis of apoptotic cells, epithelial cell polarization, neuronal adhesion, migration, differentiation, and growth-factor-induced formation of membrane ruffles. It forms an active heterodimer with Rho GDI in the cytosol, known as sigma 1, participating in the stimulation of NADPH oxidase activity in macrophages. Essential for SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly, RAC1 also stimulates PKN2 kinase activity. It collaborates with RAB7A to regulate the formation of ruffled borders in osteoclasts and promotes the nuclear shuttling of NR3C2 in podocytes for proper kidney functioning. In neurons, RAC1 is involved in dendritic spine formation, synaptic plasticity, spine morphogenesis, and synapse formation, highlighting its multifaceted role in neurobiology. Furthermore, RAC1 plays a crucial role in regulating GABA(A) receptor synaptic stability and GABAergic inhibitory synaptic transmission through PAK1 activation and F-actin stabilization. The isoform B of RAC1 exhibits distinctive features in its GEF-independent GDP/GTP exchange and impaired GTP hydrolysis, partially restored by GTPase-activating proteins, suggesting nuanced regulatory mechanisms in its effector interactions.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

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