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Product Information

MONOCLONAL ANTI-G α

CLONE 1C.2

Purified Mouse Immunoglobulin

Product Number **G 9667**

Product Description

Monoclonal Anti-G α (mouse IgG1 isotype) is derived from the hybridoma produced by the fusion of splenocytes from BALB/c mice immunized with partially purified bovine brain G α protein and mouse myeloma Ag8 (NS1) cells. The antibody is purified by Protein G chromatography.

Monoclonal Anti-G α recognizes human, bovine, rat and guinea pig G α protein (39–42 kDa single band). It does not crossreact with transducin, G α i1, G α i2, G α i3, or G α s. ADP-ribosylation of G α does not affect the reactivity of the antibody. The antibody has been used in immunoblotting applications.

G proteins play a critical role in signal transduction by coupling cell surface, seven-transmembrane domain receptors to intracellular signaling pathways. G proteins are membrane associated heterotrimeric proteins comprising α - (36-52 kDa), β - (35-36 kDa), and γ - (8-10 kDa) subunits. Receptor activation catalyzes the exchange of GTP for GDP bound to the inactive G α subunit resulting in a conformational change and dissociation of the α subunit from the $\beta\gamma$ -subunit complex. This enables both the G α -GTP complex and the $\beta\gamma$ to initiate signals by interacting with downstream effector proteins such as enzymes or channels. Hydrolysis of the GTP by the intrinsic GTPase activity of G α allows for re-association of the G α -GDP with the $\beta\gamma$ -subunit complex. This re-association blocks effector contact sites thus terminating interactions with all effectors.¹ RGS (regulators of G protein signaling) proteins are potent accelerators of the intrinsic GTPase activity of G α subunits, thus controlling the response kinetics of a variety of cell signaling processes.^{2,3}

G protein α subunits are grouped into four distinct classes (s, i/o, q, and 12) based on amino acid sequence similarities. Cholera toxin can ADP-ribosylate members of the α s family. This modification inhibits their ability to hydrolyze GTP and leaves them

constitutively active. Pertussis toxin ADP-ribosylates some members of the α i/o family. This uncouples them from their receptors, thus inhibiting signal transduction from these receptors. Three major pertussis toxin-sensitive G protein α subunits have been identified in mammalian brain: α o, α i1, α i2 and α i3. The G α i proteins are involved in the hormonal regulation of adenylyl cyclase. They inhibit the cyclase response to β -adrenergic stimuli. G α i subunits may also stimulate some potassium channels.⁴ G α o is predominantly expressed in the central nervous system and heart. It couples to several well-characterized receptors in the brain and can regulate both N-type Ca²⁺ channels as well as some K⁺ channels.⁵

The levels of the three pertussis-sensitive G α subunits in brain change in response to differentiation. Levels of α i1 but not α i2 increased during nerve growth factor-induced differentiation, however, α i2 but not α i1 increased when LA-N-5 cells were differentiated with retinoic acid. The concentration of G α o increased in both cell lines during differentiation. In addition, ADP-ribosylation of α o, α i1, and α i2 with pertussis toxin reduced the concentrations of each protein after 24 h.⁶ Levels of G α o have also been shown to change with disease state. For example, the density of G α o in cortical membranes of Alzheimer's postmortem brains was significantly lower than that found in control subjects brains.⁷

Reagent

Monoclonal Anti-G α is supplied as a solution in phosphate buffered saline, pH 7.4, with 0.08% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

Store at -20°C . Upon initial thawing freeze the solution in working aliquots for extended storage. Avoid repeated freezing and thawing to prevent denaturing the antibody. Do not store in a frost-free freezer. The antibody is stable for at least 12 months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

Product Profile

A recommended working concentration of 1 to 5 $\mu\text{g/ml}$ is determined by immunoblotting using brain or IMR-5 neuroblastoma cell lysates.

Note: In order to obtain best results using different techniques and preparations we recommend determining optimal working concentration by titration.

References

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