Mouse G-CSF R/CD114 Antibody

Monoclonal Rat IgG_{2B} Clone # 680206

Catalog Number: MAB6039

DESCRIPTION

Species Reactivity	Mouse
Specificity	Detects mouse G-CSF R/CD114 in direct ELISAs. In direct ELISAs, no cross-reactivity with recombinant human (rh) G-CSF R, rhGM-CSF R beta, recombinant mouse (rm) GM-CSF R alpha, or rmM-CSF R is observed.
Source	Monoclonal Rat IgG_{2B} Clone # 680206
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line NS0-derived recombinant mouse G-CSF R/CD114 Cys26-Asp626 Accession # P40223
Endotoxin Level	<0.01 EU per 1 µg of the antibody by the LAL method.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS.

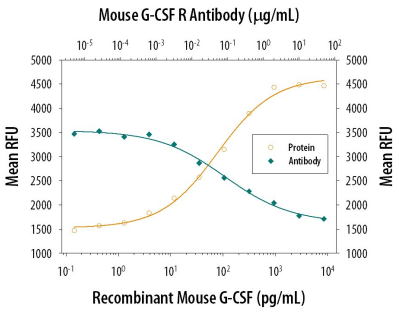
APPLICATIONS

Please Note: *Optimal dilutions should be determined by each laboratory for each application. General Protocols are available in the Technical Information section on our website.*

Neutralization	Measured by its ability to neutralize G-CSF-induced proliferation in the M-NFS-60 mouse myelogenous leukemia lymphoblast cell line. Shirafuji, N. *et al.* (1989) Exp. Hematol. **17**:116. The Neutralization Dose (ND_{50}) is typically 0.015-0.075 µg/mL in the presence of 0.15 ng/mL Recombinant Mouse G-CSF.

DATA

Neutralization



Cell Proliferation Induced by G-CSF and Neutralization by Mouse G-CSF R/CD114 Antibody. Recombinant Mouse G-CSF (Catalog # 414-CS) stimulates proliferation in the M-NFS-60 mouse myelogenous leukemia lymphoblast cell line in a dose-dependent manner (orange line). Proliferation elicited by Recombinant Mouse G-CSF (0.15 ng/mL) is neutralized (green line) by increasing concentrations of Rat Anti-Mouse G-CSF R/CD114 Monoclonal Antibody (Catalog # MAB6039). The ND_{50} is typically 0.015-0.075 µg/mL.

PREPARATION AND STORAGE

Reconstitution	Sterile PBS to a final concentration of 0.5 mg/mL.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution.

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Monoclonal Rat IgG_{2B} Clone # 680206

Catalog Number: MAB6039

BACKGROUND

Granulocyte colony stimulating factor (G-CSF) is a pleiotropic cytokine best known for its specific effects on the proliferation, differentiation, and activation of hematopoietic cells of the neutrophilic and granulocyte lineage (1). G-CSF plays an important role in defense against infection, in inflammation and repair, and in the maintenance of steady state hematopoiesis. Cell activation by G-CSF is mediated by granulocyte colony stimulating factor receptor alpha (G-CSF R; also CD114), a 95-105 kDa type I transmembrane protein and member of the cytokine receptor superfamily, type I cytokine receptor family, and type 2 subfamily of receptor proteins. Mouse G-CSF R is synthesized as an 837 amino acid (aa) precursor that contains a 25 aa signal sequence, a 601 aa extracellular domain (ECD), a 24 aa transmembrane region, and a 187 aa cytoplasmic tail. The ECD contains one Ig-like C2-type domain, five fibronectin type-III domains, and 11 potential sites for N-linked glycosylation. Within the ECD there is also a WSXWS motif (aa 319-323) that is necessary for proper protein folding and thereby efficient intracellular transport and cell-surface receptor binding (2). Also, within the cytoplasmic domain there is a Box 1 motif which is required for JAK interaction and/or activation (1). Mouse G-CSF R shares 63% aa sequence identity with human G-CSF R. G-CSF R is expressed in mature neutrophils, neutrophilic precursors, myeloid leukemia cells, and placenta (1). Mutations have been found in the gene encoding G-CSF R in some patients with severe congenital neutropenia (1). These mutations typically lead to a truncation in the cytoplasmic domain of the G-CSF R leading to maturation arrest of neutrophilic precursors in the bone marrow and neutropenia in peripheral blood (3). Binding of G-CSF to its receptor induces dimerization or oligomerization of the receptor activating cytoplasmic tyrosine kinases (2). Signal transduction from pathways that involve Janus tyrosine kinases/signal transducer and activator of transcription proteins (Jak1, Jak2, and Tyk2/STAT3 and STATG), src-related protein tyrosine kinases (Lyn and Syk), Ras/MAP kinase, and phosphatidylinositol have been reported to be activated upon G-CSF stimulation (4).

References:

1. Ward, A.C. (2007) Front. Biosci. **12**:608.
2. Layton, J.E. and N.E. Hall (2006) Front. Biosci. **11**:3181.
3. Mitsui, T. *et al*. (2003) Blood **101**:2990.
4. Nicola, N.A. in *Cytokine Reference*, 2001, Oppenheim, J.J. and M. Feldmann, eds. Academic Press p.1935.

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