Human/Mouse Semaphorin 7A Antibody

Monoclonal Rat IgG_{2B} Clone # 238906

Catalog Number: MAB2068

DESCRIPTION

Species Reactivity	Human/Mouse
Specificity	Detects mouse Semaphorin 7A in direct ELISAs and Western blots. In direct ELISAs, 100% cross-reactivity with recombinant human (rh) Semaphorin 7A is observed and no cross-reactivity with rhSemaphorin 3A, 3B, 6D, or recombinant mouse Semaphorin 3C, 3E, 3F, 6A, 6B, or 6C is observed.
Source	Monoclonal Rat IgG_{2B} Clone # 238906
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line NS0-derived recombinant mouse Semaphorin 7A Gln45-Ala646 Accession # Q9QUR8
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 either lyophilized or 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.*

	Recommended Concentration	Sample
Western Blot	1 µg/mL	Recombinant Mouse Semaphorin 7A (Catalog # 1835-S3)

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.5 mg/mL in sterile PBS.
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.

BACKGROUND

Semaphorin 7A (Sema7A, designated CD108, previously Sema K1 or Sema L), is an ~80 kDa membrane-anchored glycoprotein that is a member of the Semaphorin family of axon guidance molecules (1-4). On human erythrocytes, it is the John Milton Hagen (JMH) blood group antigen (4). Sema7A is the only known Class 7 or glycophosphatidylinositol (GPI)-linked semaphorin; its expression is concentrated in the brain, spleen and thymus (1-5). Mouse Sema7A cDNA encodes a 44 amino acid (aa) signal sequence, a 602 aa extracellular domain (ECD) including Sema and C2-type Ig-like domains, and an 18 aa propeptide/GPI membrane anchor signal sequence. Mature mouse Sema7A shares 89%, 98%, 85%, 86% and 89% aa identity with corresponding human, rat, bovine, canine and equine Sema7A, respectively. The Sema7A sema domain contains an RGD integrin interaction motif (4). Although it binds plexin-C1 in vitro and may be coexpressed with it, many of its activities depend on interaction with β1 integrins such as α1β1 (6-10). Sema7A signaling through the two receptors may cause opposing effects (8). Sema7A is an immune semaphorin, with expression and activity on $CD4^+CD8^+$ thymocytes, activated T cells, macrophages and microglia (2, 9-12). T cell Sema7A interacts with monocytic cells, stimulating their chemotaxis, production of pro-inflammatory cytokines, and dendritic differentiation (5, 6). However, on the T cells themselves, Sema7A downregulates TCR signaling by promoting TCR internalization, modulating T cell responses (9). In lung macrophages, Sema7A is induced by TGF-β and participates in TGF-β-induced lung fibrosis (12). Sema7A is also expressed on pre-osteoblasts and osteoclasts, where it promotes migration and fusion, respectively; on keratinocytes, where it promotes melanocyte spreading and dendricity; and on some neurons, for example, promoting axon outgrowth in the developing olfactory tract (8, 10, 13).

References:

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