Recombinant Mouse 5235-S4B Semaphorin 4D/CD100 Fc Chimera

Catalog Number: 5235-S4

DESCRIPTION

Source

Mouse myeloma cell line, NS0-derived mouse Semaphorin 4D/CD100 protein

Mouse Semaphorin 4D (Phe24-Met711) Accession # NP_038688	IEGRMDP	Mouse IgG_{2A} (Glu98-Lys330)

N-terminus C-terminus

N-terminal Sequence Analysis	Phe24
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	103.4 kDa (monomer)

SPECIFICATIONS

SDS-PAGE	115-140 kDa, reducing conditions
Activity	Measured by its ability to promote the survival and differentiation of human peripheral blood monocytes. The ED_{50} for this effect is 0.8-3.2 µg/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 200 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	BulkLotPrefix assignment required for Storage Info

BACKGROUND

Semaphorin 4D (Sema4D/CD100, previously sem J, G or C-like 2) is a 150 kDa type I transmembrane glycoprotein of the Class 4 family of transmembrane immune and nervous system semaphorins (1-3). The mouse Sema4D cDNA encodes 861 amino acids (aa) including a 23 aa signal sequence, a 710 aa extracellular domain (ECD) with sema, PSI and immunoglobulin-like domains, a 21 aa transmembrane domain and a 107 aa cytoplasmic domain. Within the ECD portion expressed (aa 24-711), mouse Sema4D shares 93%, 87%, 82% and 78% aa identity with rat, human, porcine and canine Sema4D, respectively. Sema4D is active as a homodimer that occurs via a membrane-proximal intermolecular disulfide (C707) and hydrophobic interactions involving F244 and F246 (4, 5). Proteolysis by metalloproteinases such as TACE/ADAM17 and MMP-14 (MT1-MMP) produces a soluble, active 120 kDa form that is also active as a dimer (5-7). Sema4D, produced by T cells and activated B and dendritic cells, acts through its low affinity receptor CD72 in the immune system (1, 2). CD72 inhibits the antigen presenting cells that express it; this inhibition is relieved by Sema4D binding (8). Sema4D thus causes enhanced B cell survival, differentiation of macrophages and DC, and enhanced T cell antigen priming (2, 8, 9). Sema4D and its high affinity receptor, Plexin B1, are expressed in complimentary patterns in several regions of the brain, and assist in guidance of developing neurons (10). Lower-affinity Sema4D/Plexin B2 binding also enhances neuronal radial and tangential migration (11). Sema4D produced by tumor-associated macrophages binds endothelial cell Plexin B1 to promote tumor angiogenesis, while Sema4D-induced neovascularization and platelet activation is involved in atherosclerosis (3, 6, 7, 12-14). Receptors associated in *cis* with plexins, such as Met and ErbB2, can alter Sema4D-mediated activities (3).

References:

1. Furuyama, T. *et al.* (1996) J. Biol. Chem. **271**:33376.
2. Kumanogoh, A. and H. Kikutani (2004) Cell. Mol. Life Sci. **61**:292.
3. Ch'ng, E.S. and A. Kumanogoh (2010) Mol. Cancer **9**:251.
4. Janssen, B.J.C. *et al.* (2010) Nature **467**:1118.
5. Elhabazi, A. *et al.* (2001) J. Immunol. **166**:4341.
6. Zhu, L. *et al.* (2007) Proc. Natl. Acad. Sci. USA **104**:1621.
7. Basile, J.R. *et al.* (2007) J. Biol. Chem. **282**:6899.
8. Kumanogoh, A. *et al.* (2005) Int. Immunol. **17**:1277.
9. Ishida, I. *et al.* (2003) Int. Immunol. **15**:1027.
10. Worzfield, T. *et al.* (2004) Eur. J. Neurosci. **19**:2622.
11. Hirschberg, A. *et al.* (2010) Mol. Cell. Biol. **30**:764.
12. Sierra, J.R. *et al.* (2008) J. Exp. Med. **205**:1673.
13. Yukawa, K. *et al.* (2010) Int. J. Mol. Med. **26**:39.
14. Zhu, L. *et al.* (2009) Atheroscler. Thromb. Vasc. Biol. **29**:1039.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449