Recombinant Human Neuropilin-1 Fc Chimera

Catalog Number: 10455-N1

DESCRIPTION

Source

Human embryonic kidney cell, HEK293-derived human Neuropilin-1 protein

Human Neuropilin-1 (Phe22-Lys852) Accession # NP_003864.4	IEGRMD	Human IgG_1 (Pro100-Lys330)

N-terminus C-terminus

N-terminal Sequence Analysis	Phe22
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	120 kDa

SPECIFICATIONS

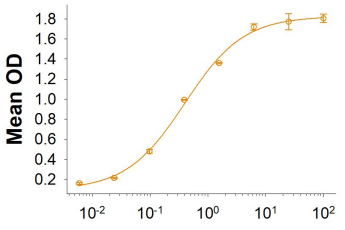
SDS-PAGE	117-131 kDa, under reducing conditions
Activity	Measured by its binding ability in a functional ELISA. When Recombinant Human Neuripilin-1 Fc Chimera is immobilized at 1 µg/mL (100 µL/well), Recombinant Human VEGF 165 (Catalog # 293-VE) binds with an ED_{50} of 0.25-1.5 ng/mL.
Endotoxin Level	<0.10 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 500 µg/mL in PBS.
Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
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. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

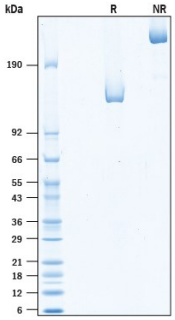
DATA

Binding Activity



When Recombinant Human Neuropilin-1 Fc Chimera (Catalog # 10445-N1) is immobilized at 1 µg/mL (100 µL/well), Recombinant Human VEGF 165 (Catalog # Catalog # 293-VE) binds with an ED_{50} of 0.25-1.5 ng/mL.

SDS-PAGE



2 µg/lane of Recombinant Human Neuropilin-1 Fc Chimera (Catalog # 10455-N1) was resolved by SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 117-131 kDa and 220-250 kDa, respectively.

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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

Recombinant Human Neuropilin-1 Fc Chimera

Catalog Number: 10455-N1

BACKGROUND

Neuropilin-1 (Npn-1, also known as neuropilin and CD304) is a 130-140 kDa type I transmembrane (TM) glycoprotein that regulates axon guidance and angiogenesis (1-4). The full-length 923 amino acid (aa) human Npn-1 isoform 1 contains an 835 aa extracellular domain (ECD) that shows 92-95% aa identity with mouse, rat, bovine and canine Npn-1 (3, 4). The ECD contains two N-terminal CUB domains (termed a1a2), two domains with homology to coagulation factors V and VIII (b1b2) and a MAM (meprin) domain (c). C-terminally divergent splice variants with 704, 644, 609, and 551 aa lack the MAM and TM domains and are demonstrated or presumed to be soluble antagonists (1, 5-7). A 906 aa form lacks a TM segment, but secretion has not been found (8). The sema domains of Class III secreted semaphorins such as Sema3A bind Npn-1 a1a2 (9). Heparin, the heparin-binding forms of VEGF (VEGF 165, VEGF-B and VEGF-E), PlGF (PlGF2), and the C-terminus of Sema3 bind the b1b2 region (9, 10). Npn-1 and Npn-2 share 48% aa identity within the ECD and can form homo- and hetero-oligomers via interaction of their MAM domains (1). Neuropilins show partially overlapping expression in neuronal and endothelial cells during development (1, 2). Both neuropilins act as co-receptors with plexins, mainly plexin A3 and A4, to bind class III semaphorins that mediate axon repulsion (11). However, only Npn-1 binds Sema3A, and only Npn-2 binds Sema3F (1). Both are co-receptors with VEGF R2 (also called KDR or Flk-1) for VEGF 165 binding (1). Sema3A signaling can be blocked by VEGF 165, which has higher affinity for Npn-1 (12). Npn-1 is preferentially expressed in arteries during development or those undergoing remodeling (1, 2). Npn-1 is also expressed on dendritic cells and mediates DC-induced T cell proliferation (13). Npn-1 is a marker of CD4+ Treg cells and a population of CD8+ T-cells infiltrating solid tumors. Immunotherapies that block Npn-1 synergizes with anti-PD-1 to enhance CD8+ proliferation and response (14). There is evidence that Npn-1 with VEGF-A plays a role in stemness of breast cancer cell by activating Wnt/b-catenin pathway (15).

References:

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