



# Recombinant Human Soluble Neuropilin-1

20171109BB



**FOR RESEARCH ONLY! NOT FOR HUMAN USE!**

<b>Cat.-no:</b>	<b>S01-019</b>
<b>Size:</b>	25 µg
<b>Lot. No.:</b>	According to product label
<b>Country of origin:</b>	Germany

## Scientific Background

<b>Gene:</b>	<i>NRP1</i>
<b>Synonyms:</b>	Vascular endothelial growth factor 165 receptor, CD304, VEGF165R, NRP

Neuropilin-1 (NRP-1, CD304) is a 130-140 kDa type I transmembrane glycoprotein that regulates axon guidance and angiogenesis. The human NRP-1 contains a 623 aa extracellular domain (ECD) that shows 92-95% aa identity with mouse, rat, bovine and canine NRP-1. 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-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. Heparin, the heparin-binding forms of VEGF (VEGF165, VEGF-B; VEGF-E), PlGF-2, and the C-terminus of Sema3 bind the b1b2 region. NRP-1 and NRP-2 share 48% aa identity within the ECD and can form homo and hetero-oligomers via interaction of their MAM domains. Neuropilins show partially overlapping expression in neuronal and endothelial cells during development. Both neuropilins act as coreceptors with Plexins, mainly Plexin A3 and A4, to bind class III Semaphorins that mediate axon repulsion. However, only NRP-1 binds Sema3A, and only NRP-2 binds Sema 3F. Both are co-receptors with VEGFR-2 (KDR7Flk1) for VEGF165 binding. Sema 3A signaling can be blocked by VEGF165, which has higher affinity for NRP-1. NRP-1 is preferentially expressed in arteries during development or those undergoing remodeling. NRP-1 is also expressed on dendritic cells and mediates DC-induced T-cell proliferation.

## References

1. Miao HQ and Klagsbrun M, Cancer Metastasis Rev. 2000, 19:29-37
2. Neufeld G et al, Trends Cardiovasc Med 2002, 12:13-9
3. Romeo PH et al, Adv Exp Med Biol 2002, 515:49-54
4. Neufeld G et al, Adv Exp Med Biol 2002, 515:81-90
5. Chen C et al, World J Surg 2005, 29:271-5
6. Staton CA et al, J Pathol 2007, 212:237-48
7. Bagri A et al, Clin Cancer Res 2009, 15:1860-4
8. Zachary IC, Biochem Soc Trans 2011, 39:1583-91
9. Nakayama M et al, Exp Cell Res 2013; 319:1340-7

## Sequence

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FRNDKCGDTIKIESPGYLTSPGYPHSYHPSEKCEWLIQAPDPYQRIMINFNP
HFDLEDRDCKYDYVEVFDGENENGFHFRGKFCGKIAPPPVSSGPFLEFKFVS
DYETHGAGFSIRYEIFKRGPECSQNYTTPSGVIKSPGPFPEKYPNSELECTYIV
FAPKMEIILEFESFDLEPDSNPPGGMFCRYDRLEIWDGFDPVGFHIGRYCG
QKTPGRIRSSGILSMVFYTDSDAIAKEGFSANYSVLQSSVSEDFKMEALGM
ESGEIHSQITASSQYSTNWSAERSRLNYPENGWTPGEDSYREWIQVDLGLL
RFVTAVGTQGAISKETKKKYVKTYKIDVSSNGEDWITIKENKPVLFQNT
NPTDVVAVFPKPLITRFVRIKATWETGISMRFEVYGGKITDYPCSGMLGM
VSLISDSQITSSNQGDRNWPENIRLVTSRSGWALPPAPHSYINWLQIDL
GEEKIVRGI IQGGKHRENKVFMRKFKIGYSNNGSDWKMIMDDSKRKAKEFE
GNNDYDTPELRTPALSTRFIRIYPERATHGGLGRMELLLGCEVEAPTAGPT
TPNGNLVDECDDQANCHSGTGDFFQLTGTTVLATEKPTVIDSTIQSGIKL
EHHHHHH
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## Database References

<b>Protein RefSeq:</b>	NP_003864.4
<b>Uniprot ID:</b>	O14786
<b>mRNA RefSeq:</b>	NM_003873.5

## Product Specifications

<b>Expressed in</b>	Insect cells
<b>Purity</b>	> 98% by SDS-PAGE & Coomassie stain
<b>Buffer</b>	PBS
<b>Stabilizer</b>	None
<b>Formulation</b>	lyophilized
<b>Length (aa):</b>	631
<b>MW:</b>	82,6 kDa
<b>Result by N-terminal sequencing</b>	FRNDKCGDTI

**Stability:** The material is stable for greater than six months at -20° C to -70° C. After the first thawing it is recommended to aliquote the material, because repeated freeze-thaw cycles will decrease the activity. Store at 4°C not longer than 2 days.

**Reconstitution:** The lyophilized human sNRP-1 is soluble in water and most aqueous buffers; it should be reconstituted in water or PBS to a concentration of not lower than 100µg/ml.



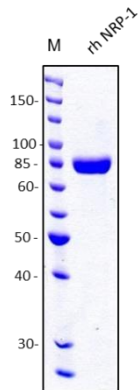
**AVOID REPEATED FREEZE AND THAW CYCLES!**

**Biological Activity:** Measured by its binding ability in a functional ELISA. Immobilized soluble Neuropilin-1 binds all VEGF-A isoforms with the exception of VEGF<sub>121</sub>.

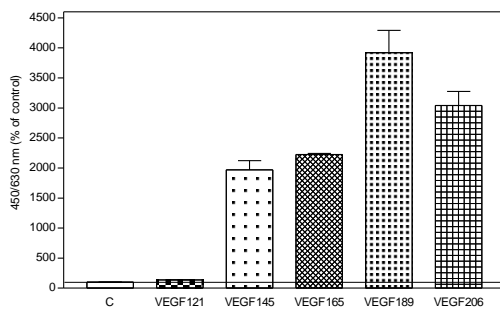


# Recombinant Human Soluble Neuropilin-1

## Handling/Application



**Fig. 1:** SDS-PAGE analysis of recombinant human soluble NRP-1. Sample was loaded in 10% SDS-polyacrylamide gel under reducing conditions and stained with Coomassie blue.



**Fig. 2:** Binding of VEGF-A isoforms to recombinant human soluble Neuropilin-1 receptor (NRP-1) in a functional ELISA. NRP-1 was coated with 1µg/ml (100µl/well), the ligands were added with 10ng/ml.