ALPHA DIAGNOSTIC INTERNATIONAL

Product Specification Sheet

Nogo 1-40 peptide (NEP1-40)

Cat. # NEP140-100	Human NEP1-40 Peptide **FORM:** Liquid Lyophilized	**SIZE**: 100 ug
Cat. # NEP140-1000	Human NEP1-40 Peptide **FORM:** Liquid Lyophilized	**SIZE**: 1 mg
Cat. # NEP140-115	Human NEP1-40 Peptide, Scrambled control for NEP140 **FORM:** Liquid Lyophilized	**SIZE**: 100 ug

Many tissues such as muscle, skin, liver, and peripheral nerve, have remarkable ability to repair and regrow after injury. However, the CNS (brain and spinal cord) is limited in its ability to repair or regrowth causing permanent brain damage or paralyses. Most recently an inhibitory myelin protein, **Nogo (Neurite outgrowth**), has been cloned and characterized. It may help block the regeneration of the CNS. Nogo is the 4th member of **reticulon** (**Rtn**) family. There are three alternative isoforms of Nogo, designated **Nogo-A** (full length human protein 1192 aa; calculated mol wt 135 kDa; rat 1163 aa), an intermediate form **Nogo-B** (373 aa; ~37 K, lacks 186-1004 aa within the extracellular domain), and a shorter form **Nogo-C** (199 aa; ~25 K, similar to rat vp20 and foocen-s; lacks 186-1004 aa but which has a smaller, alternative N-terminal domain). Nogo-A has a putative extracellular domain of 1024 AA, 2-3 TM domains, and a short C-terminus of 43 AA. Nogo-A is localized to the CNS-myelin, and is highly expressed in oligodendorcytes but not by Schwann cells. Nogo-B and Nogo-C have been found in several non-neuronal tissues (skeletal muscle, kidney, skin, lung, and spleen), and it may be the 35-kDa protein recognized by IN-1 antibody.

Full length Nogo-A has the strongest inhibitory activity and it may be the 250-kDa protein recognized by the IN-1 antibody. The N-terminus of Nogo A is unique, whereas the C-terminus has sequence homology with the reticulon family. Nogo-A has endoplasmic reticulum retention signal sequence. It is not clear how Nogo-A contacts axons, and reaches the membrane of oligodendorcytes. A 66-aa hydrophilic region of Nogo, located between the two TM domains, has the most inhibitory properties of Nogo. In contrast to Nogo, Rtn 1, -2, and 3 do not inhibit axonal regeneration. A 25-aa **inhibitory peptide sequence** (designated as **Nogo-P4**; **rat Nogo 1056-1080 aa** or 31-55 AA of the 66 AA active peptide) is sufficient to produce core inhibitory properties (see GrandPre T et al (2000). This 66-aa region also has the least similarity to Rtn proteins. The corresponding **Rtn-P4** peptide sequence has no activity. A peptide sequences 1-40 aa of the Nogo-66, designated **NEP1-40**, acts as competitive antagonist of NgR and blocks Nogo-66 or CNS myelin inhibition of axonal outgrowth in vitro. Intrathecal administration of NEP1-40 to rats with mid thoracic spinal cord hemisection results in significant axon growth of corticospinal tract.

Source of Peptides

The human 40-aa NEP1-40 aa (Acetyl-RIY KGV IQA IQK SDE GHP FRA YLE SEV AIS EEL VQK YSN S-amide corresponding to 1-40 aa of Nogo-66, mol wt. 4627, purity >95%) designated as **NEP1-40-100** was synthesized and purified by hplc (mo. Wt 4627, purity >95%) (refs. 1).

Scrambled Control# NEP140-115

Acetyl-AAA DEE EEE FGG HII IKK KKL LNP QQQ RRS SSS SVV V V Y Y-amide, purity, 95%, Mol Wt. 4627 Daltons.

The scrambled sequence Cat # NEP140-115 is randomly scrambled version of NEP140-100. It may serve as a control peptide for various studies.

Form & Storage of Peptide Control

Control/blocking peptide

100 ug/100 ul	1 mg
solution	lyophilized powder

Supplied in Buffer: PBS, pH 7.5
Reconstitute in PBS or other buffers at 1 mg/ml

Storage

Short-term: unopened, undiluted vials for less than a week at 4oC.

Long-term: at –20C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

Stability: 6-12 months at –20oC or below.
Shipping: 4oC for solutions and room temp for powder.

Specificity & Cross-reactivity

The human NEP1-40 peptide sequence is 100% conserved in human, mouse and rat Nogo-66. Biological activity of NEP1-40 is not established.

General References (1) GrandPre T et al (2002) Nature 417, 547; Chen MS et al (2000) Nature 403, 434-439; GrandPre T et al (2000) Nature 403; 439-444; Goldberg JL and Barres BA (2000) Nature 403; 369-370; Prinjha R et al (2000) Nature 403, 383-384; Tessier-Lavigne M and Goodman CS (2000) Science 287, 813-814; Nagase T et al (1998) DNA Res. 5, 355-364

(2) Citations of ADI's Nogo-P4 (Nep1-40) (see web site for updated list)

Yamashita T, 2003, Nature Neuroscience 6, 461 – 467
Hasegawa Y, 2004, J. Neurosci., 24: 6826 – 6832
Fujitani M, 2005, J. Neurochem. 94,15-21, ,

*This product is for In vitro research use only.

Related material available from ADI

Anti-Nogo A, -B, -C, amyloid 1-40, 1-42, APP, Parkin, Synucleins (α, β, γ), Presenilins 1, 2

Nep140-100, -1000, -115 70308A

Alpha Diagnostic Intl Inc., 6203 Woodlake Center Dr, San Antonio, TX 78244, USA; **Email**: service@4adi.com
☎ (800) 786-5777; (210) 561-9515; **Fax**: (210) 561-9544; **Web Site**: www.4adi.com