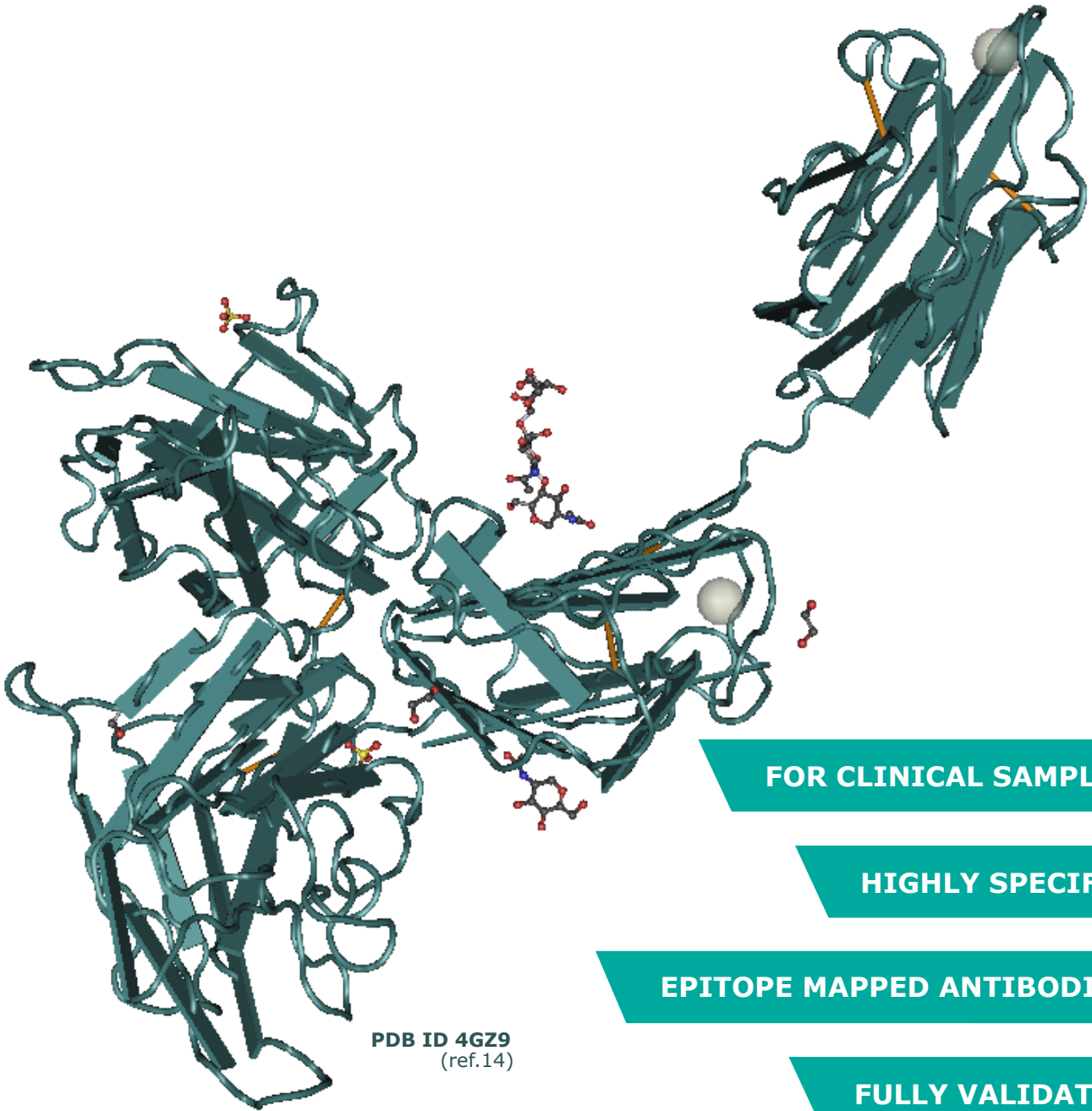


**Total soluble
NEUROPILIN-1 ELISA**



PDB ID 4GZ9
(ref.14)

FOR CLINICAL SAMPLES

HIGHLY SPECIFIC

EPITOPE MAPPED ANTIBODIES

FULLY VALIDATED

Setting the **standard**
for **clinical** research.



Background

Neuropilin-1 (NRP1) is a single-pass transmembrane glycoprotein of 923 amino acids, composed of a large extracellular region, a short transmembrane domain and a short cytoplasmic tail <https://www.uniprot.org/uniprot/O14786>. Due to alternative splicing or shedding, the extracellular region can be released into circulation as soluble Neuropilin. NRP1 is an essential cell surface receptor functioning in many key biological processes including the cardiovascular, neuronal, and immune systems (1,2).

Multiple ligands bind to the extracellular region of NRP1, like class III semaphorins which have a key role in axonal guidance, or members of the VEGF family of angiogenic cytokines. Ligand-binding to transmembrane NRP1, which has co-receptor function, leads to signaling via receptor proteins containing a PDZ domain.

In contrast, ligand-binding to soluble Neuropilin-1 (sNRP1) has antagonistic properties by acting as decoy (1,3).

NRP1 is expressed by a variety of cells and tissues. For instance, the transmembrane protein is expressed by neuronal cells, endothelial cells, vascular smooth muscle cells, cardiomyocytes, multiple tumor cell lines and neoplasms, osteoblasts, naïve T cells or platelets. Expression of soluble Neuropilin-1 is further described in a variety of non-endothelial cells, e.g. in liver hepatocytes and kidney distal and proximal tubules.

NRP1 is implicated in a multitude of physiological and pathological settings, e.g. in axon guidance, vascularization, tumor growth or regeneration and repair (4-9). Neuropilin-1 is described to stimulate osteoblast differentiation, to act as potential biomarker for the prediction of heart failure outcome or to play a role in renal fibrogenesis (6,10,11). As a co-receptor for VEGF, NRP1 is a potential target for cancer therapies (12).

The total Neuropilin-1 enzyme immunoassay is a four hour ELISA to quantify human total soluble Neuropilin-1 (sNRP1). The assay is validated for human serum and plasma samples (EDTA, citrate, heparin) (13) (see validation data: www.bmgrp.com). To remove potentially bound ligands, samples are pre-treated with guanidine hydrochloride before testing. Recombinant human soluble Neuropilin-1, isoform 2 is used as calibrator.

Areas of Interest

- Oncology
- Nephrology
- Osteology
- Cardiology

Features and Benefits

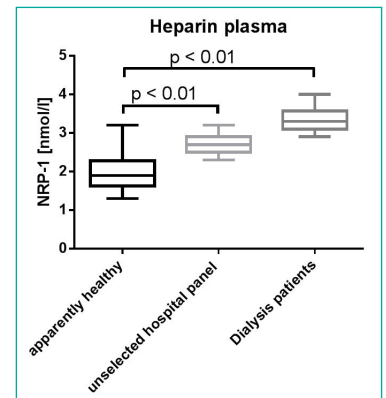
- LOW SAMPLE VOLUME – only 10µl / well required
- FULLY VALIDATED – according to ICH, EMEA and FDA guidelines
- PROPRIETARY PRODUCT – in-house R&D and production
- GUARANTEED PERFORMANCE – rigorous validation and QC
- HIGHLY SPECIFIC – epitope mapped antibodies and characterized reagents

Specificity

The assay is optimized to detect total soluble Neuropilin-1 (sNRP1) in human plasma and serum. This assay recognizes endogenous and recombinant human soluble Neuropilin-1 (isoform 2 and 3). The total soluble Neuropilin-1 ELISA utilizes a monoclonal anti-human Neuropilin-1 antibody that binds to a linear epitope close to the N-terminus in the CUB 1 domain of the Neuropilin-1 molecule. The polyclonal detection antibody binds to multiple linear epitopes, distributed over the entire Neuropilin-1 molecule.

soluble Neuropilin-1 Values in Various Hospital Panels

sNRP1	Neuropilin-1 [nmol/l]		
	apparently healthy panel (n=24)	unselected hospital panel (n=8)	dialysis patients (n=16)
Mean	2.0	2.7	3.3
Median	1.9	2.7	3.3
Minimum	1.3	2.3	2.9
Maximum	3.2	3.2	4



Spike/Recovery

Matrix	Mean S/R [%]	
	+ 1.5 nmol/l	+ 6 nmol/l
Serum (n=6)	90	92
EDTA plasma (n=6)	91	93
Citrate plasma (n=1)	98	108
Heparin plasma (n=1)	115	97

Dilution Linearity

Matrix	Mean R of dilution steps [%]		
	1+1	1+3	1+7
Serum (n=6)	95	104	114
EDTA plasma (n=6)	107	110	115
Citrate plasma (n=1)	101	102	111
Heparin plasma (n=1)	99	104	110

Precision

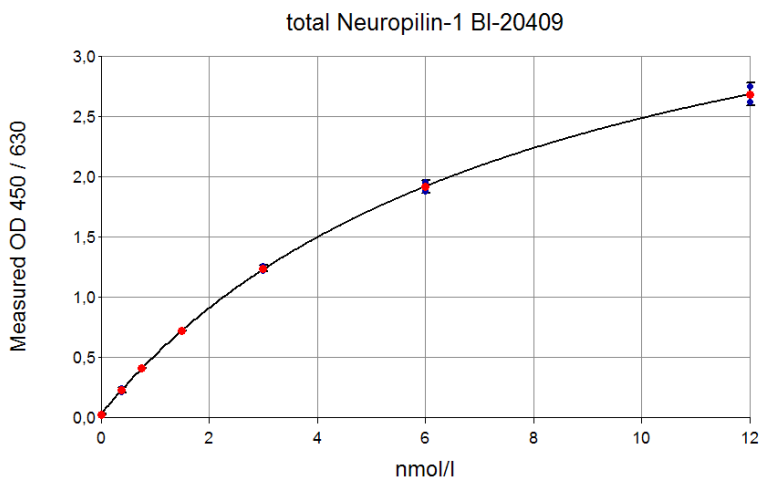
Intra-assay (n=6)	Sample 1	Sample 2
Mean (nmol/l)	0.8	6.2
SD (nmol/l)	0.1	0.4
CV (%)	11	7

Inter-assay (n=12)	Sample 1	Sample 2
Mean (nmol/l)	0.8	6.2
SD (nmol/l)	0.08	0.36
CV (%)	10	6

Assay Characteristics

- Method: Sandwich ELISA, HRP/TMB, 12x8-well strips
- Sample type: Serum, EDTA plasma, citrate plasma and heparin plasma, cell-culture
- Sample size: 10 µl / well
- Standard range: 0 to 12 nmol/l (7 standards and 2 controls in a human serum matrix)
- Sensitivity: LOD (0 nmol/l + 3 SD): 0.09 nmol/l; LLOQ: 0.09 nmol/l
- Incubation: 30 min / 2 h / 1 h / 30 min, room temperature
- Unit conversion: 1 ng/ml=0.014 nmol/l; 1 nmol/l=69.7 ng/ml (MW: 69.7 kDa)

Typical Standard Curve



Related Biomedica Products

- soluble Semaphorin 4D ELISA (cat.no. BI-20405)
- Endostatin ELISA (cat.no. BI-20742)
- Osteoprotegerin ELISA (cat.no. BI-20403)
- DKK-1 ELISA (cat.no. BI-20413)
- Periostin ELISA (cat.no. BI-20433)
- free soluble RANKL ELISA (cat.no. BI-20462)
- bioactive Sclerostin ELISA (cat.no. BI-20472)
- FGF23 (C-terminal) ELISA (cat.no. BI-20702)
- NT-proANP ELISA (cat.no. BI-20892)
- thrombomiR™ miRNA Biomarkers (cat.no. TW-KT-021-TR)

Literature

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