

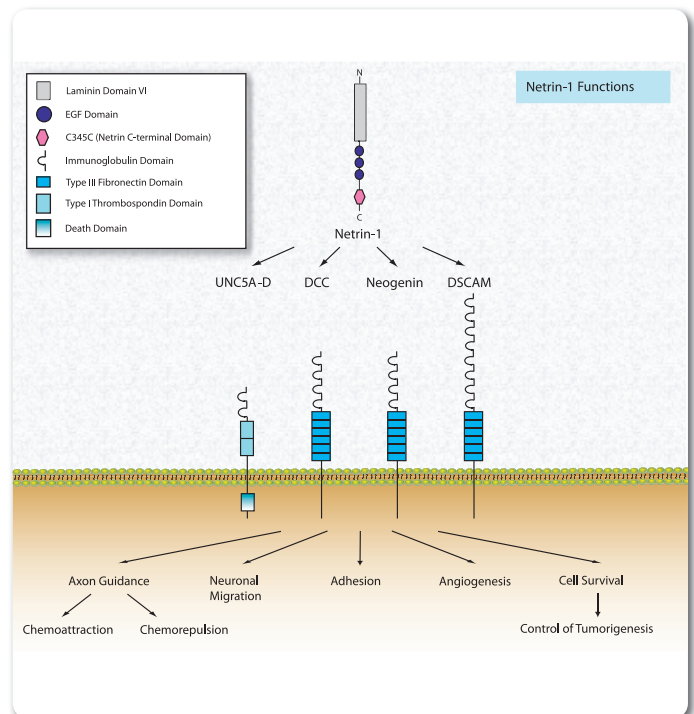
# NETRINS & DEPENDENCE RECEPTORS

## Netrins & Their Receptors

The netrins (whose name means “one who guides” in Sanskrit) are a family of laminin-related secreted proteins. In neuronal development netrin-1 is predominantly expressed by floor plate cells as commissural axons extend toward the ventral midline. Netrin-1 induces axonal outgrowth, axon orientation and neuronal migration. It is chemoattractive for some neurons and chemorepellent for others.

Netrin-1 is also expressed in organs such as pancreas, kidney, lung, bowel, bone and mammary gland. In these tissues, netrin-1 has different roles such as invasion of epithelial cells, leucocytes migration, cell adhesion or angiogenesis (see figure). As a survival factor, netrin-1 contributes to the control of tumorigenesis. Netrin-1 is overexpressed in metastatic breast cancer, conferring a selective advantage for tumor cell survival. Netrin-1 has recently been shown to play a role in kidney by maintaining vascular endothelial function. Moreover, netrin-1 might be used as a biomarker for acute kidney injury (AKI).

To carry its functions, netrin-1 interacts with specific receptors that belong to three protein families: DCC/neogenin, UNC5 and DSCAM. These receptors belong to the family of “dependence receptors” that induce apoptosis in the absence of their respective ligand, and promote survival when bound to their ligand (not proven for DSCAM yet). The netrin-1 mediated survival signal inhibits p53-induced apoptosis and is dependent on the activation of PI3-kinase and AKT signaling.



## Netrin-4 (human) ELISA Kit

**Product No:** APO-54N-037-KI01

**Quantity:** 96 wells

**Sensitivity:** >50pg/ml (range 78 to 5000pg/ml)

- For the direct measurement of human netrin-4 from serum, plasma or cell culture supernatants.

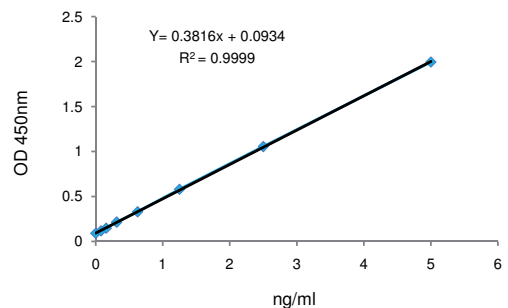


FIGURE: Typical standard curve for Netrin-4 (human) ELISA Kit.

# Netrins & Their Receptors

## Netrin-1

### Netrin-1 (human) (rec.)

ALX-522-100-2010 2 x 10 µg

Produced in HEK 293 cells. The extracellular domain of human netrin-1 (aa 28-604) is fused at the N-terminus to a FLAG<sup>®</sup>-tag. **SPECIFICITY:** Binds to human, mouse and rat receptors UNC5H and DCC. **BIOLOGICAL ACTIVITY:** Induces axon outgrowth. Inhibits DCC- and UNC5B (UNC5H2)-mediated apoptosis in HEK 293 cells.

**LIT:** Netrin-1 expression confers a selective advantage for tumor cell survival in metastatic breast cancer: J. Fitamant, et al.; PNAS **105**, 4850 (2008)

### Netrin-1 (mouse) (rec.)

ALX-522-124-2010 2 x 10 µg

Produced in HEK 293 cells. The extracellular domain of mouse netrin-1 (aa 27-604) is fused at the N-terminus to a FLAG<sup>®</sup>-tag. **SPECIFICITY:** Binds to human and mouse UNC5B.

### Netrin-1 (chicken) (rec.)

ALX-522-106-2010 2 x 10 µg

Produced in HEK 293 cells. Chicken netrin-1 (aa 27-606) is fused at the C-terminus to a linker peptide (6 aa) and a FLAG<sup>®</sup>-tag. **SPECIFICITY:** Binds to human receptor UNC5B.

### Netrin-1, mAb (Nora-1)

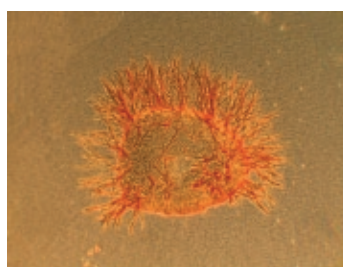
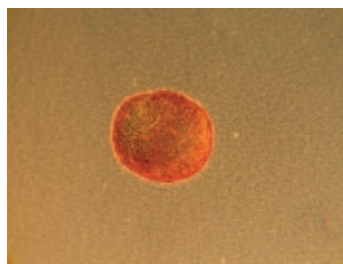
ALX-804-838-C100 100 µg

**CLONE:** Nora-1. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant human, mouse and chicken netrin-1 (aa 28-264). **SPECIFICITY:** Recognizes human, mouse and chicken netrin-1. **APPLICATION:** ELISA, IHC, IP, WB.

### Netrin-1, pAb (AT118)

ALX-210-943-C100 100 µg

From rabbit. **IMMUNOGEN:** Recombinant human netrin-1 (aa 23-449) (Prod. No. ALX-522-100). **SPECIFICITY:** Recognizes human, mouse and chicken netrin-1. **APPLICATION:** IHC (FS, PS), WB.



**FIGURE:** Netrin-1 (human) (rec.) (Prod. No. ALX-522-100) mediated commissural axon outgrowth.

**METHOD:** Dorsal spinal cord was dissected out from E13 rat embryos and cultured in collagen matrix in the presence or absence of netrin-1 (250ng/ml). Axons were then stained with an anti-β-tubulin antibody.

Picture courtesy of Véronique Corset, Centre Léon Bérard, Lyon.

## Latest Insight

### Netrin-1 inhibits Endothelial Cell Apoptosis during Angiogenesis

Recently, M. Castets et al. showed that netrin-1 controls the survival of endothelial cells and promotes angiogenesis by blocking apoptosis induced by its unbound UNC5B receptor. They propose that overexpression of netrin-1 in tumor epithelial cells may have two additive effects. First, as reported by J. Fitamant et al., to confer a selective advantage for epithelial tumor cells by inhibiting dependence-receptor-induced cell death. Second, it could also potentially favor blood vessel maintenance and/or development, and consequently promote cancer progression. Therefore, an anticancer approach based on disruption of netrin-1 function, should eradicate not only tumor epithelial cells but also tumor angiogenetic vessels.

**LIT:** Inhibition of Endothelial Cell Apoptosis by Netrin-1 during Angiogenesis: M. Castets, et al.; Dev. Cell **16**, 614 (2009) • Netrin-1 expression confers a selective advantage for tumor cell survival in metastatic breast cancer: J. Fitamant, et al.; PNAS **105**, 4850 (2008)

## Neogenin & DCC

### Neogenin (human):Fc (human) (rec.)

ALX-522-122-C050 50 µg

Produced in HEK 293 cells. The extracellular domain of human neogenin (aa 34-1105) is fused to the Fc portion of human IgG1.

### DCC (Fibronectin Domain 5) (human) (rec.)

ALX-522-109-C050 50 µg

Produced in *E. coli*. The fibronectin domain 5 (FBN5) of human DCC (aa 841-941) is fused to a N-terminal tag. **SPECIFICITY:** Binds to human netrin-1.

**LIT:** Netrin-1 expression confers a selective advantage for tumor cell survival in metastatic breast cancer: J. Fitamant, et al.; PNAS **105**, 4850 (2008)

### DCC (human), mAb (Axel-1)

ALX-804-853-C100 Purified 100 µg

ALX-804-853PF-C100 Purified (PF) 100 µg

ALX-804-853TD-T100 ATTO 488 100 tests

ALX-804-853TS-T100 ATTO 647N 100 tests

**CLONE:** Axel-1. **ISOTYPE:** Mouse IgG2a. **IMMUNOGEN:** Recombinant human DCC fibronectin domain 5 (Prod. No. ALX-522-109). **SPECIFICITY:** Recognizes human DCC. **APPLICATION:** FC. **FUNC:** Blocking.

incorporating

**ALEXIS** **BIOMOL**  
BIOCHEMICALS

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## UNC

### UNC5A (human):Fc (human) (rec.)

ALX-522-121-C050 50 µg  
Produced in CHO cells. The extracellular domain of UNC5A (UNC5H1) (aa 26-306) is fused to the Fc portion of human IgG1.

### UNC5A (human), mAb (Dettwy-1)

ALX-804-864-C100 100 µg  
**CLONE:** Dettwy-1. **ISOTYPE:** Mouse IgG1. **IMMUNOGEN:** Extracellular domain of human UNC5A (UNC5H1) (aa 26-306) fused to the Fc portion of human IgG1 (Prod. No. ALX-522-121). **SPECIFICITY:** Recognizes human UNC5A. **APPLICATION:** ELISA, FC.

### UNC5B (mouse):Fc (human) (rec.)

ALX-522-123-C050 50 µg  
Produced in HEK 293 cells. The extracellular domain of mouse UNC5B (UNC5H2) (aa 27-376) is fused to the Fc portion of human IgG1. **SPECIFICITY:** Binds to human and mouse netrin-1.

### UNC5B (human):Fc (human) (rec.)

ALX-522-095-C050 50 µg  
Produced in CHO cells. The extracellular domain of human UNC5B (UNC5H2) (aa 28-363) is fused to the Fc portion of human IgG1. **SPECIFICITY:** Binds to human, mouse and chicken netrin-1 and to chicken netrin-2. **BIOLOGICAL ACTIVITY:** Inhibits netrin-1 mediated survival of HEK 293 cells overexpressing DCC or UNC5B.

**LT:** Netrin-1 expression confers a selective advantage for tumor cell survival in metastatic breast cancer: J. Fitamant, et al.; PNAS **105**, 4850 (2008)

### UNC5B, mAb (Guido-1)

ALX-804-846-C100 100 µg  
ALX-804-846TD-T100 ATTO 488 100 tests  
ALX-804-846TS-T100 ATTO 647N 100 tests  
**CLONE:** Guido-1. **ISOTYPE:** Mouse IgG2. **IMMUNOGEN:** Recombinant human UNC5B (UNC5H2) (aa 28-363) (Prod. No. ALX-522-095). **SPECIFICITY:** Recognizes human and mouse UNC5B. **APPLICATION:** FC.

## Netrin-4

### Netrin-4 (human) (rec.)

ALX-522-113-2010 2 x 10 µg  
Produced in HEK 293 cells. Human netrin-4 is fused at the N-terminus to a FLAG<sup>®</sup>-tag.

### Netrin-4 (mouse) (rec.)

[β-Netrin (mouse) (rec.)]  
ALX-522-136-2010 2 x 10 µg  
Produced in HEK 293 cells. Mouse netrin-4 (aa 21-628) is fused at the N-terminus to a FLAG<sup>®</sup>-tag.

### Netrin-4 (human), mAb (Netry-1)

ALX-804-860-C100 100 µg  
ALX-804-860B-C100 Biotin 100 µg  
**CLONE:** Netry-1. **ISOTYPE:** Mouse IgG1. **IMMUNOGEN:** Recombinant human netrin-4 (Prod. No. ALX-522-113). **SPECIFICITY:** Recognizes human netrin-4. **APPLICATION:** ELISA, IP.

### Netrin-4 (human), mAb (Netry-2)

ALX-804-862-C100 100 µg  
**CLONE:** Netry-2. **ISOTYPE:** Mouse IgG1. **IMMUNOGEN:** Recombinant human netrin-4 (Prod. No. ALX-522-113). **SPECIFICITY:** Recognizes human netrin-4. **APPLICATION:** ELISA, IP, WB.

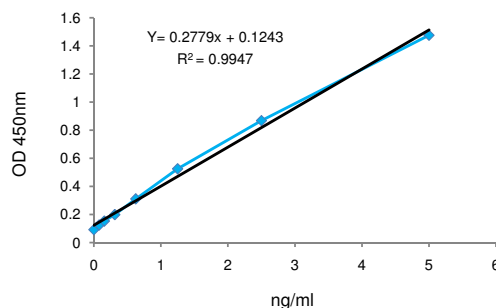
### Netrin-4 (human), pAb (AT128)

ALX-210-953-C100 100 µg  
ALX-210-953B-C100 Biotin 100 µg  
From rabbit. **IMMUNOGEN:** Recombinant human netrin-4 (Prod. No. ALX-522-113). **SPECIFICITY:** Recognizes human netrin-4. **APPLICATION:** ELISA, IP, WB.

## Netrin-4 (human) Detection Set [For ELISA Application]

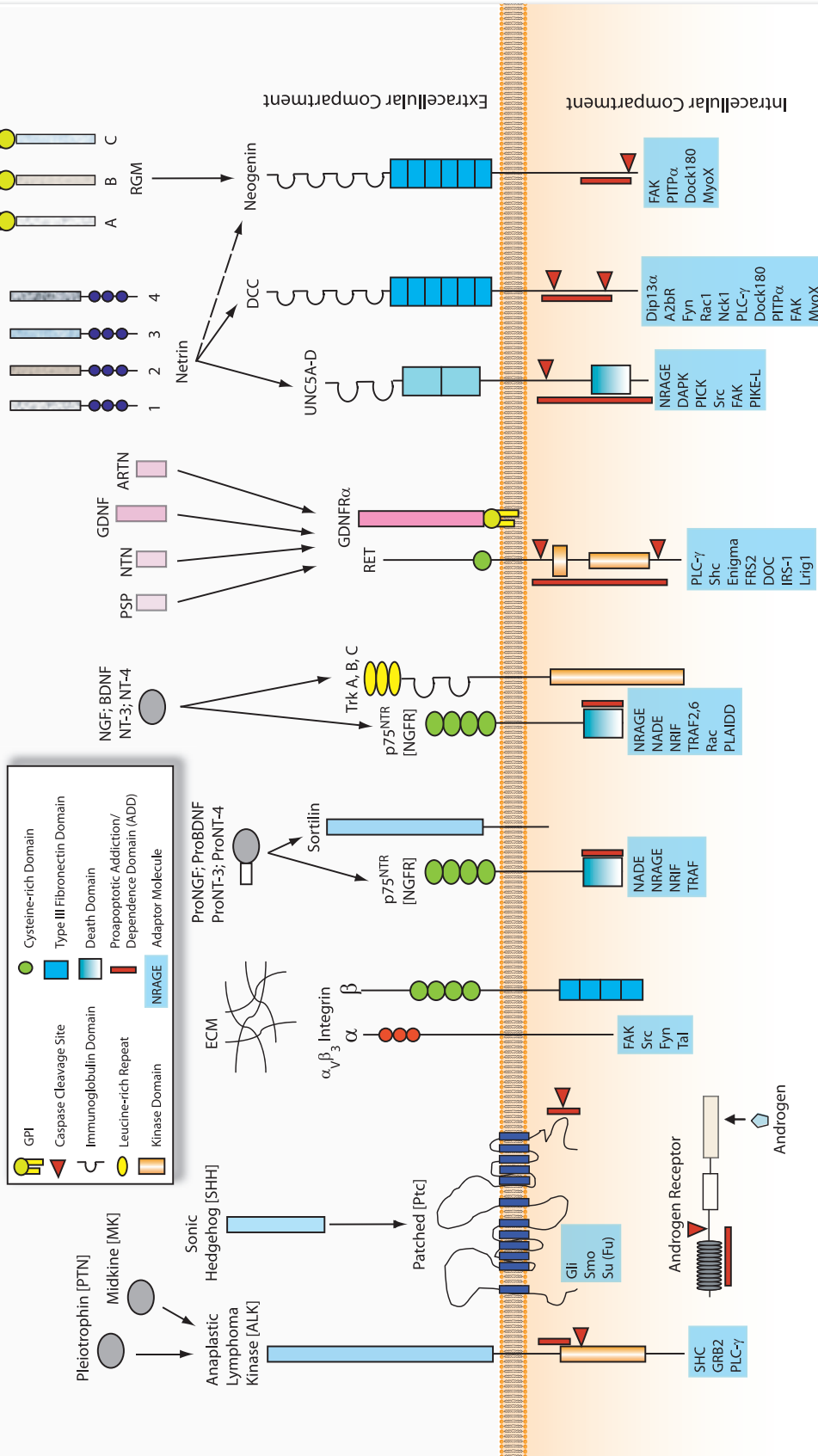
**Product No:** APO-54N-033-KI01  
**Quantity:** For 5 x 96 wells  
**Content:** 1 vial Standard (lyophilized) (STD)  
1 vial Coating Antibody (COAT)  
1 vial Detection Antibody (DET)  
**Sensitivity:** >50pg/ml (range 0 to 5ng/ml)

- For the quantitative determination of human netrin-4 from biological fluids (serum, plasma and cell culture supernatant).



**FIGURE:** Typical standard curve for Netrin-4 (human) Detection Set [for ELISA Application]

# Dependence Receptors & Their Ligands



Dependence Receptors, ligands, and related products are available on [www.enzolifesciences.com](http://www.enzolifesciences.com)



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