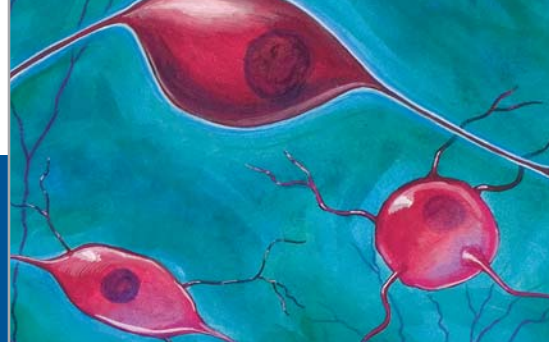


New Products September 2009



Human Angiogenesis Fluorokine® Multianalyte Profiling Kit

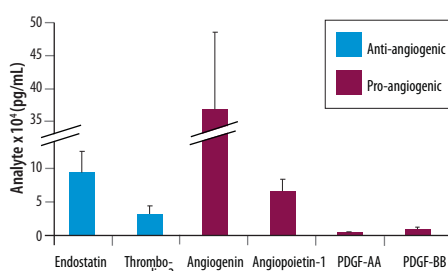
Fluorokine MultiAnalyte Profiling (MAP) kits are bead-based assays designed to simultaneously measure the levels of multiple proteins using the Luminex® analyzer. Detection is achieved through a bead-based antibody-antigen sandwich method. Briefly, samples are incubated with color-coded beads that are pre-coated with analyte-specific capture antibodies for the molecule of interest. Expression levels are determined following incubation with a biotinylated detection antibody and streptavidin-conjugated phycoerythrin (PE). Using a Luminex Analyzer, independent lasers determine the color of each bead and the magnitude of the PE-derived signal, which is directly proportional to the levels of bound analyte.

The Human Angiogenesis Fluorokine MAP kit is designed to simultaneously detect multiple angiogenesis-related molecules in a single sample. Under physiological conditions the formation of new blood vessels is tightly controlled by the release of growth and inhibitory factors. Positive regulators of angiogenesis include FGFs, VEGFs, and PDGF-BB. In contrast, Endostatin and Thrombospondin-2 are known inhibitors of angiogenesis. Factors such as VEGF-A, placenta growth factor (PlGF), and Angiopoietin-1 stimulate angiogenesis as well as the *de novo* incorporation of marrow-derived endothelial cells into the walls

of growing vessels. The combination of these factors dictates whether an endothelial cell will remain quiescent or become angiogenic.

The Human Angiogenesis Fluorokine MAP base kit is compatible with bead-sets for the detection of up to 11 different molecules simultaneously. For each sample type (serum, plasma, or cell culture supernatant), the panel is evaluated for sensitivity, precision, recovery, sample linearity, specificity, and the ability to recognize both natural and recombinant proteins.

For more information about Fluorokine MAP kits and available bead-sets, please visit our website at www.RnDSystems.com/go/Multiplex.



Simultaneous Measurement of Angiogenesis-related Biomarkers in Human Serum Samples. Protein levels were assessed using the Fluorokine MAP Angiogenesis Base Kit (Catalog # LAN000) and the indicated bead sets. Data are presented as mean ± standard deviation (n=15).

Human Angiogenesis Panel A: Base Kit

Analyte	Species	Catalog #	Size
Base Kit	Human	LAN000	1 Kit

Human Angiogenesis Panel A: Bead Sets

Analyte	Species	Typical Sensitivity	Typical Range	Catalog #	Size
Angiogenin	Human	2.7 pg/mL	2.5-10400 pg/mL	LAN265	1 Kit
Angiopoietin-1	Human	51.1 pg/mL	36-149000 pg/mL	LAN923	1 Kit
Endostatin	Human	31.9 pg/mL	22-90500 pg/mL	LAN1098	1 Kit
FGF acidic	Human	6.7 pg/mL	3.9-15800 pg/mL	LAN232	1 Kit
FGF basic	Human	4.91 pg/mL	9-2200 pg/mL	LUH233	1 Kit
PDGF-AA	Human	1 pg/mL	1.8-7350 pg/mL	LAN221	1 Kit
PDGF-BB	Human	2 pg/mL	5.3-21800 pg/mL	LAN220	1 Kit
PlGF	Human	1 pg/mL	2.8-11300 pg/mL	LAN264	1 Kit
Thrombospondin-2	Human	57.4 pg/mL	56.2-230000 pg/mL	LAN1635	1 Kit
VEGF	Human	1.84 pg/mL	3-2400 pg/mL	LUH293	1 Kit
VEGF-D	Human	19.1 pg/mL	21-87300 pg/mL	LAN622	1 Kit

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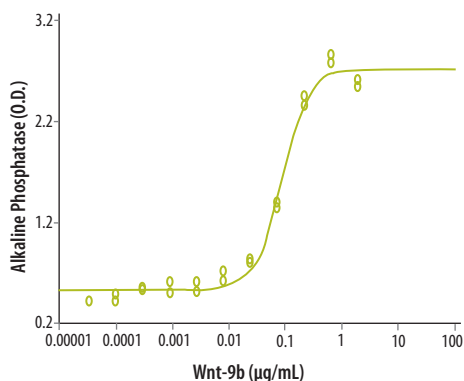


Mouse Wnt-9b

Wnt-9b, previously known as Wnt-14b and Wnt-15, belongs to the Wnt family of lipid-modified, cysteine-rich, secreted glycoproteins. Wnts function in multiple biological processes, including embryonic induction, cell fate determination, generation of cell polarity, and patterning of the neural tube and limbs.^{1,2} Wnts signal through either a canonical β -catenin-dependent signaling pathway or a non-canonical β -catenin-independent pathway.^{1,2}

Mature mouse Wnt-9b contains 336 amino acids and shares 93% and 98% amino acid identity with human and rat Wnt-9b, respectively. Wnt-9b is evolutionarily related to Wnt-9a and Wnt-3, and is primarily expressed in late embryonic stages and in the adult kidney.³ It is required for renal vesicle induction during kidney development and is also involved in the regulation of mesenchymal to epithelial transitions in the mammalian urogenital system.^{4,5} Wnt-9b induces mesonephric and metanephric tubulogenesis, nephron development, and caudal extension of the Müllerian duct by way of the β -catenin-dependent canonical signaling pathway.^{4,5} It also regulates planar cell polarity and kidney tubule morphogenesis by signaling through the non-canonical pathway.⁶ In addition to these functions, Wnt-9b is involved in facial midline morphogenesis.⁷

R&D Systems now offers recombinant mouse Wnt-9b (Catalog # 3669-WN).



Wnt-9b Induces Alkaline Phosphatase Production. Increasing concentrations of recombinant mouse Wnt-9b (Catalog # 3669-WN) promote alkaline phosphatase production by C3H10T1/2 mouse fibroblast cells.

References

1. www.stanford.edu/~rnuuse/wntwindow.html
2. Logan, C.Y. & R. Nusse (2004) *Annu. Rev. Cell Dev. Biol.* **20**:781.
3. Qian, J. *et al.* (2003) *Genomics* **81**:34.
4. Park, J.-S. *et al.* (2007) *Development* **134**:2533.
5. Carroll, T.J. *et al.* (2005) *Dev. Cell* **9**:283.
6. Karner, C.M. *et al.* (2009) *Nat Genet.* **41**:793.
7. Lan, Y. *et al.* (2006) *Dev. Dyn.* **235**:1448.

Recombinant Proteins

Protein	Species	Source	Catalog #	Size
α -N-acetylgalactosaminidase	<i>C. perfringens</i>	<i>E. coli</i>	5705-GH-100	100 μ g
B4GALT1	Human	NS0	3609-GT-010	10 μ g
β (1-3)-Galactosidase	<i>X. campestris</i>	<i>E. coli</i>	5704-GH-050	50 μ g
BMP-7	Mouse	CHO	5666-BP-010	10 μ g
Cadherin-20	Human	CHO	5604-CA-050	50 μ g
Carbohydrate Sulfotransferase 3/CHST3	Mouse	CHO	5356-ST-020	20 μ g
Carbohydrate Sulfotransferase 4/CHST4	Mouse	CHO	5547-ST-020	20 μ g
Carboxyl Ester Lipase/CEL	Mouse	NS0	5658-CE-010	10 μ g
Carboxylesterase 2/CES2	Human	NS0	5657-CE-010	10 μ g
CD97, Variant 2	Mouse	CHO	5494-CD-050	50 μ g
Cochlin	Human	NS0	5249-CH-050	50 μ g
CXCL3/GRO γ /CINC-2/DCIP-1	Mouse	<i>E. coli</i>	5568-CA-025	25 μ g
CXCL5/ENA-78	Human	<i>E. coli</i>	254-XB-025	25 μ g
Cytosolic Sulfotransferase 1E1/SULT1E1	Human	<i>E. coli</i>	5545-ST-020	20 μ g
Endo- β -N-acetylglucosaminidase F3/Endo F3	<i>F. meningosepticum</i>	<i>E. coli</i>	5548-GH-010	10 μ g
Endoglin/CD105, Fc Chimera	Porcine	CHO	5605-EN-025	25 μ g
EphB3, Fc Chimera	Human	NS0	5667-B3-050	50 μ g
FGL2	Mouse	CHO	5257-FL-050	50 μ g
FOLR2	Human	CHO	5697-FR-050	50 μ g
G6b, Fc Chimera	Human	CHO	5499-G6-050	50 μ g
Galectin-3BP/MAC-2BP	Mouse	NS0	5608-GA-050	50 μ g
GM-CSF R α	Human	NS0	706-GR-050	50 μ g
IL-4I1	Human	CHO	5684-AO-020	20 μ g
IL-4I1	Mouse	CHO	5576-AO-020	20 μ g
Integrin α 2 β 1	Human	CHO	5698-A2-050	50 μ g
Integrin α 4 β 1	Human	CHO	5668-A4-050	50 μ g
LRP-1 Cluster II, Fc Chimera	Human	NS0	2368-L2-050	50 μ g
Meteorin	Mouse	NS0	3475-MN-025	25 μ g
Myeloperoxidase	Mouse	NS0	3667-MP-250	250 μ g
PEAR1	Human	CHO	4527-PR-050	50 μ g
PLTP	Mouse	NS0	4918-PL-025	25 μ g
Semaphorin 3C, Fc Chimera	Human	NS0	5570-S3-050	50 μ g
Serpin A9/Centerin	Mouse	NS0	5679-PI-010	10 μ g
Siglec-1, Fc Chimera	Mouse	NS0	5610-SL-050	50 μ g
TLR1, Fc Chimera	Human	NS0	1484-TR-050	50 μ g
TNF- α /TNFSF1A	Rabbit	<i>E. coli</i>	5670-TG-025	25 μ g
TSLP	Mouse	<i>Sf</i> 21	555-TSB-010	10 μ g
Wnt-9b	Mouse	CHO	3669-WN-025	25 μ g

Animal-Free™ Proteins

Protein	Species	Source	Catalog #	Size
Animal-Free IL-4	Human	<i>E. coli</i>	AFL204	1 mg

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
15-PGDH/HPGD	Human	Goat IgG	AF5660	100 µg
ADAM32	Human	Sheep IgG	AF5380	100 µg
AP-2β	Human	Goat IgG	AF5634	100 µg
Apolipoprotein E3/ApoE3	Human	Goat IgG	AF4144	100 µg
ARNT	Human	Goat IgG	AF5630	100 µg
BIK	Human	Sheep IgG	AF5474	100 µg
BoNT-C1 Heavy Chain	<i>C. botulinum</i>	Sheep IgG	AF5425	100 µg
BRDG1	Human	Goat IgG	AF5717	100 µg
Brg1	Human	Goat IgG	AF5738	100 µg
BTF3	Human/Mouse/Rat	Goat IgG	AF5747	100 µg
Bub3	Human	Goat IgG	AF5706	100 µg
C4.4A/LYPD3	Human	Sheep IgG	AF5428	100 µg
C4.4A/LYPD3	Mouse	Goat IgG	AF5567	100 µg
Carboxylesterase 2/CES2	Mouse	Goat IgG	AF5280	100 µg
CD96	Mouse	Sheep IgG	AF5690	100 µg
Carbohydrate Sulfotransferase 1/CHST1	Human	Sheep IgG	AF5316	100 µg
Carbohydrate Sulfotransferase 2/CHST2	Human	Goat IgG	AF5107	100 µg
Carbohydrate Sulfotransferase 4/CHST4	Human	Sheep IgG	AF5357	100 µg
Carbohydrate Sulfotransferase 5/CHST5	Human	Goat IgG	AF5446	100 µg
Complement Factor D/Adipsin	Mouse	Sheep IgG	AF5430	100 µg
Complexin-2	Human/Mouse/Rat	Goat IgG	AF5085	100 µg
CRABP2	Human	Goat IgG	AF5740	100 µg
CSRP1	Human/Mouse/Rat	Goat IgG	AF5739	100 µg
ERα/NR3A1	Human	Sheep IgG	AF5715	100 µg
GAPDH	Human/Mouse/Rat	Goat IgG	AF5718	100 µg
IL-34	Mouse	Sheep IgG	AF5195	100 µg
Integrin α1/CD49a	Human	Sheep IgG	AF5676	100 µg
IRF9	Human/Mouse	Sheep IgG	AF5629	100 µg
Phospho-LKB1 (S428)	Human	Rabbit IgG	AF5636	100 µg
Neuroglycan C/CSPG5	Human	Sheep IgG	AF5685	100 µg
Neuroglycan C/CSPG5	Mouse/Rat	Goat IgG	AF5665	100 µg
NFATC1	Human	Goat IgG	AF5640	100 µg
Notch-1	Mouse	Sheep IgG	AF5267	100 µg
Nucleoredoxin	Human	Goat IgG	AF5719	100 µg
Peroxiredoxin 4	Human/Mouse/Rat	Goat IgG	AF5460	100 µg
Peroxiredoxin 5	Human/Mouse/Rat	Goat IgG	AF5724	100 µg
PGC1β	Human/Mouse	Goat IgG	AF5656	100 µg
Phospholipase A2 Group IIA/PLA2G2A	Human	Sheep IgG	AF5374	100 µg
PTH1 R	Human	Sheep IgG	AF5709	100 µg
Renin R	Human	Goat IgG	AF5716	100 µg
Serpin A12	Rat	Goat IgG	AF5347	100 µg
Siglec-1	Human	Sheep IgG	AF5197	100 µg
SLAIN1	Human/Mouse	Goat IgG	AF5638	100 µg

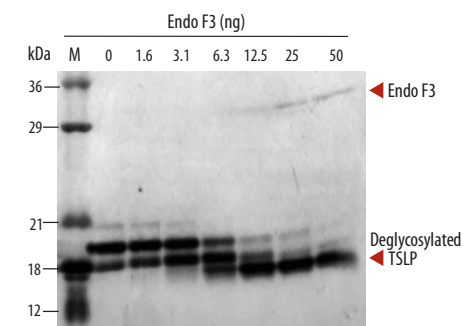
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Endo-β-N-acetylglucosaminidase F3

N-glycans are commonly found on various glycoproteins and may be important for protein folding or function. While peptide N-glycosidase from *Flavobacterium meningosepticum* (PNGase F) is widely used to release virtually all types of N-glycans under denaturing conditions, endo-β-N-acetylglucosaminidase 3 (Endo F3) from the same bacterial species can be used to release particular types of N-glycans under native conditions.¹⁻³ In general, Endo F3 works more efficiently on core fucosylated N-glycans.⁴

R&D Systems recombinant Endo F3 is expressed in *E. coli* and exhibits an apparent molecular weight of 30 kDa. The activity of the Endo F3 protein was measured by its ability to deglycosylate recombinant mouse thymic stromal lymphopoietin (TSLP) under native conditions (see below). TSLP is a hemato-poietic cytokine that is related to IL-7.⁵ Purified recombinant mouse TSLP migrates as three distinct bands on SDS-PAGE, consistent with it having three potential N-glycosylation sites as predicted by its amino acid sequence. Following treatment with Endo F3, all three TSLP bands are converted to a single lower band, confirming speculation that the original bands represent glycosylated forms of the protein (Figure 1). Under the defined conditions, 12.5 ng Endo F3 was sufficient to achieve 50% removal of the glycans on recombinant mouse TSLP.

R&D Systems now offers both *Flavobacterium meningosepticum* Endo F3 (Catalog # 5548-GH) and recombinant mouse TSLP (Catalog # 555-TSB). Please see page 2 for details.



Endo F3 Deglycosylates TSLP. Recombinant mouse TSLP (Catalog # 555-TSB; 1 µg/lane) was treated with the indicated amounts of Endo F3 (Catalog # 5548-GH) for 30 minutes at 37°C under native conditions and then separated by SDS-PAGE under reducing conditions. Approximately 12.5 ng Endo F3 is required to achieve 50% removal of the glycans on the TSLP protein. The fully deglycosylated TSLP protein is indicated with an arrow. M = Molecular weight marker.

References

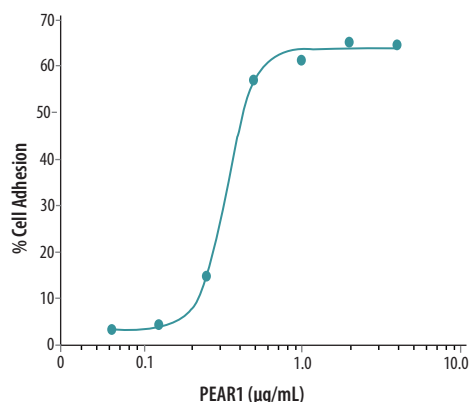
1. Maley, F. et al. (1989) Anal. Biochem. **180**:195.
2. Tarentino, A.L. et al. (1985) Biochemistry **24**:4665.
3. Tarentino, A.L. et al. (1993) J. Biol. Chem. **268**:9702.
4. Tarentino, A.L. & T.H. Plummer, Jr. (1994) Glycobiology **4**:771.
5. Sims, J.E. et al. (2000) J. Exp. Med. **192**:671.



PEAR1

Platelet endothelial aggregation receptor 1 (PEAR1) is an EGF repeat-containing, type I transmembrane protein that is primarily expressed on platelets and endothelial cells.¹ Upon the formation of platelet-platelet contacts induced by either platelet aggregation or platelet centrifugation, the PEAR1 receptor is activated by an unidentified ligand.¹ Similar to the homophilic adhesion molecules CD84 and SLAM/CD150, platelet aggregation induces tyrosine phosphorylation of PEAR1, which initiates a signaling pathway that enhances and stabilizes platelet thrombi.¹⁻³ PEAR1 phosphorylation can be inhibited by the Integrin $\alpha_{IIb}\beta_3$ antagonist, eptifibatid, indicating that PEAR1 activation is dependent on surface contacts between activated platelets.¹ Inherited variations in PEAR1 that alter its expression or function likely modify agonist-induced aggregation of native platelets.³ In addition, a genetic variant of PEAR1 is speculated to be responsible for residual platelet function during aspirin treatment.³ Since aspirin is widely used to prevent arterial thrombosis, these findings suggest that PEAR1 may be a potential target for antithrombotic drug development.

R&D Systems now offers recombinant human PEAR1 (Catalog # 4527-PR). Please see page 2 for additional details.



PEAR1 Promotes Adhesion of Thrombin-activated Human Platelets. Thrombin-activated, fluorescently-labeled human platelets were added to a culture plate coated with the indicated concentrations of recombinant human PEAR1 (Catalog # 4527-PR). The plate was washed after 1 hour and the number of adherent cells was assessed.

References

- Nanda, N. *et al.* (2005) *J. Biol. Chem.* **280**:24680.
- Nanda, N. *et al.* (2005) *Blood* **106**:3028.
- Herrera-Galeano, J.E. *et al.* (2008) *Arterioscler. Thromb. Vasc. Biol.* **28**:1484.

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
<i>Continued from page 3.</i>				
SMPD1	Human	Goat IgG	AF5348	100 µg
SNF1LK2	Human	Goat IgG	AF5737	100 µg
SOD2/Mn-SOD	Human/Mouse/Rat	Goat IgG	AF3419	100 µg
SPRY3	Human	Sheep IgG	AF5735	100 µg
SRCRB4D	Human	Sheep IgG	AF5654	100 µg
STEAP1	Human	Goat IgG	AF5587	100 µg
Syntaxin 5	Human	Goat IgG	AF5687	100 µg
Syntaxin 6	Human	Sheep IgG	AF5664	100 µg
Syntaxin-binding Protein 1	Human/Mouse/Rat	Goat IgG	AF5675	100 µg
Syntaxin-binding Protein 3	Human	Goat IgG	AF5659	100 µg
TCF-7/TCF-1	Human	Goat IgG	AF5596	100 µg
TFCP2L1	Human	Goat IgG	AF5726	100 µg
TRF-2	Human	Goat IgG	AF5635	100 µg
Tryptophan Hydroxylase 1	Human	Goat IgG	AF5276	100 µg
Uromodulin	Mouse	Sheep IgG	AF5175	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
14-3-3γ	Human/Mouse/Rat	505810	MAB5700	100 µg
ADAM32	Human	539220	MAB5380	100 µg
Akt1	Human/Mouse/Rat	538613	MAB17752	100 µg
BCAP	Human/Mouse	501813	MAB4857	100 µg
Bcl-9	Human	417514	MAB3996	100 µg
BMP-10	Human	462732	MAB2926	500 µg
BSRP-A	Mouse	529805	MAB4916	100 µg
Carbonic Anhydrase III	Human	495018	MAB2185	100 µg
Carbonic Anhydrase VI	Human	401809	MAB29391	100 µg
Caveolin-1	Human/Mouse/Rat	7C8	MAB5736	100 µg
CCK4	Human/Rat	525222	MAB4499	100 µg
CD24	Human	528807	MAB5248	100 µg
COMP/Thrombospondin-5	Human	2127-F5	MAB31341	100 µg
CRACC/SLAMF7	Mouse	520911	MAB4628	100 µg
CRACC/SLAMF7	Mouse	520914	MAB46281	100 µg
C-Reactive Protein/CRP	Rat	233539	MAB17441	500 µg
CrkL	Human/Mouse/Rat	515405	MAB5127	100 µg
Cyclophilin B	Human/Mouse/Rat	549205	MAB5410	100 µg
DEC-205	Human	523203	MAB2047	100 µg
DLL4	Mouse	207811	MAB13891	500 µg
DMC/VCC-1	Mouse	510614	MAB4270	100 µg
ENPP-3/CD203c	Human	NP4D6	MAB5756	100 µg
EphB2	Mouse	512012	MAB467	100 µg
EphB2	Mouse	512013	MAB4672	100 µg

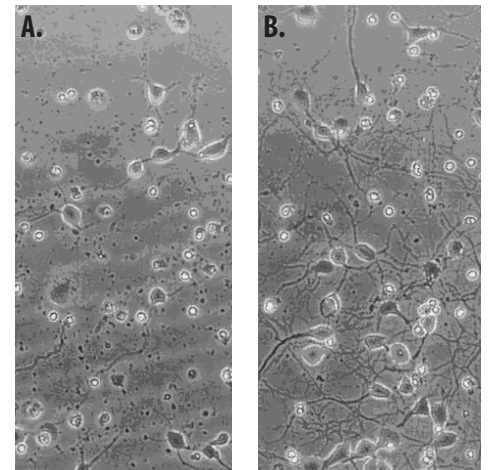
Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
EphB3	Mouse	521002	MAB432	100 µg
ESAM	Mouse	340236	MAB28271	100 µg
Fibroblast Activation Protein α/FAP	Human	427819	MAB3715	100 µg
Fetuin A/AHSG	Human	162919	MAB11841	500 µg
FGF-21	Human	461804	MAB25372	100 µg
FOLR1	Human	548908	MAB5646	100 µg
Galectin-14	Human	511124	MAB5744	100 µg
GATA-2	Human/Mouse	527530	MAB2046	100 µg
GATA-4	Human	532020	MAB2606	100 µg
Glutathione Peroxidase 4	Human/Mouse/Rat	565320	MAB5457	100 µg
gp130	Mouse	125605	MAB4682	500 µg
GRK3	Human	497018	MAB4785	100 µg
HGF R/c-MET	Human	85503	MAB3581	500 µg
IFN-γ	Bovine	345001	MAB23001	500 µg
IL-7 Rα/CD127	Mouse	132206	MAB4774	500 µg
IL-33 Propeptide	Mouse	518017	MAB5010	100 µg
Kallikrein 2	Human	426723	MAB4104	100 µg
Laforin/EPM2A	Human	523435	MAB5714	100 µg
MAG/Siglec-4a	Rat	118412	MAB5381	500 µg
MALT1	Human	MALT1-C	MAB4850	100 µg
NCAM-L1	Mouse	555	MAB5674	100 µg
Notch-1	Human	527425	MAB5317	100 µg
PKN2	Human/Mouse/Rat	509105	MAB5686	100 µg
PP2Cγ/PPM1G	Human	528322	MAB5595	100 µg
Rap2B	Human	455517	MAB5710	100 µg
Reg IIIId	Mouse	518818	MAB5678	100 µg
ROBO1	Rat	243706	MAB17491	500 µg
SCARA5	Mouse	462002	MAB4754	100 µg
SLAM/CD150	Human	542301	MAB1642	100 µg
SLP-76/LCP2	Human	460004	MAB5637	100 µg
STAT2	Human	545117	MAB1666	100 µg
Synuclein-γ	Human	514304	MAB5745	100 µg
Thrombomodulin/CD141	Human	501733	MAB3947	100 µg
Tie-2	Human	83708	MAB3132	500 µg
TLR3	Human	512505	MAB1487	100 µg
TNFRH3/TNFRSF26	Mouse	509027	MAB5330	100 µg
Transferrin	Human	507506	MAB5746	100 µg
XBP1	Human	525904	MAB4257	100 µg
ZIP4H/Tex11	Mouse	236734	MAB5627	100 µg

Meteorin

Meteorin, also known as glial cell differentiation factor, has been identified as a novel secreted protein belonging to an evolutionarily conserved family of growth factors.¹⁻³ Meteorin is expressed in both the central and peripheral nervous systems during development, primarily in neural progenitors, glial progenitors, and cells of the astrocyte lineage. In adult mice, Meteorin is exclusively expressed in the brain, most prominently by glial cells interspersed between Purkinje neurons in the cerebellum.² Various studies suggest that Meteorin plays important roles in both glial cell differentiation and axonal network formation during neurogenesis.¹⁻³ In differentiating cultures, Meteorin selectively promotes mouse cerebrotical neurospheres to form astrocytes and induces cerebellar astrocytes to become radial glia.¹ Meteorin has also been shown to activate satellite glia to induce axonal extensions in small and intermediate neurons of the sensory ganglia.¹ In addition to its role in nervous system development, Meteorin is also likely involved in mediating vascular maturation. It has been shown to be expressed and secreted by perivascular astrocytes and to upregulate the expression of Thrombospondin-1 and -2 in surrounding endothelial cells to attenuate angiogenesis.³

R&D Systems now offers recombinant mouse Meteorin (Catalog # 3475-MN). Please see page 2 for details.



Meteorin Stimulates Neurite Outgrowth. Embryonic rat cortical neurons (E16) were cultured for 3 days in the absence (A) or in the presence (B) of recombinant mouse Meteorin (Catalog # 3475-MN; 333 ng/mL). The presence of the Meteorin protein significantly enhanced neurite outgrowth.

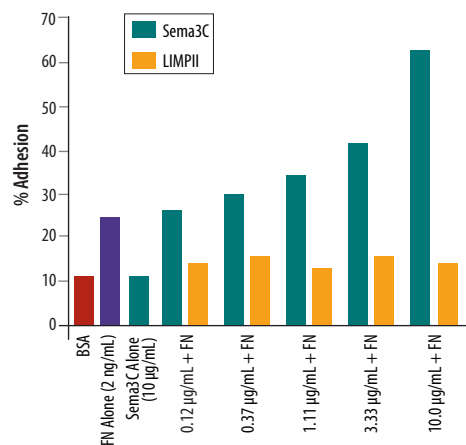
References

1. Nishino, J. *et al.* (2004) *EMBO J.* **23**:1998.
2. Jorgensen, J.R. *et al.* (2009) *J. Mol. Neurosci.* Advanced on-line publication.
3. Park, J.A. *et al.* (2008) *Glia* **56**:247.

Semaphorin 3C

Semaphorin 3C (Sema3C; previously SemaE) is one of six Class 3, secreted semaphorins. Although they have various functions, class 3 semaphorins are best known as chemorepellents that function in axon guidance or vascular growth, and may also have roles in tumor progression.^{1,2} Sema3C, specifically, is expressed in all somitic motor neurons, in lung buds, and in cardiac neural crest cells during development.¹⁻⁵ Depending on the context, it has been shown to activate integrins, and can act as a chemoattractant, chemorepellent, and/or a promoter of cell adhesion.^{4,6} For instance, in prostate cancer cells Sema3C overexpression correlates with increased cell adhesion and invasiveness.⁶ In the developing nervous system, Sema3C chemoattraction appears to coordinate with Sema3A repulsion in adjacent cell layers.^{1,4,5} Sema3C also provides an attractive force opposing Sema6A and Sema6B to guide the migration of neural crest endothelial cells to the cardiac outflow tract.⁷ Consequently, defects in aortic arch formation occur when Sema3C or its receptors are disrupted.^{3,8}

R&D Systems is now offering recombinant human Semaphorin 3C (Catalog # 5570-S3). Please see page 2 for details.



Sema3C Enhances Cell Adhesion on Fibronectin. Increasing concentrations of recombinant human Sema3C (Catalog # 5570-S3) enhances the adhesion of SVEC4-10 murine endothelial cells to a Fibronectin (FN)-coated culture plate (Catalog # 1918-FN; 2 ng/mL). This is shown in comparison to a BSA control, FN alone (2 ng/mL), Sema3C alone (10 µg/mL), and control experiments using increasing concentrations of the unrelated protein recombinant mouse LIMPII (Catalog # 1888-LM).

References

- Hinck, L. (2004) *Dev. Cell* **7**:783.
- Neufeld, G. *et al.* (2005) *Front. Biosci.* **10**:751.
- Gitler, A. D. *et al.* (2004) *Dev. Cell* **7**:107.
- Bagnard, D. *et al.* (1998) *Development* **125**:5043.
- Cohen, S. *et al.* (2005) *Eur. J. Neurosci.* **21**:1767.
- Herman, J. G. & G. G. Meadows (2007) *Int. J. Oncol.* **30**:1231.
- Toyofuku, T. *et al.* (2008) *Dev. Biol.* **321**:251.
- Feiner, L. *et al.* (2001) *Development* **128**:3061.

Labeled Antibodies

Biotinylated Antibodies

Antibody	Species	Type	Catalog #	Size
ADAM32	Human	Sheep IgG	BAF5380	50 µg
Calsyntenin-1	Human	Sheep IgG	BAF5346	50 µg
CD55/DAF	Mouse	Sheep IgG	BAF5376	50 µg
CD99-L2	Mouse	Goat IgG	BAF5024	50 µg
Carbohydrate Sulfotransferase 1/CHST1	Human	Sheep IgG	BAF5316	50 µg
Collectrin	Mouse	Sheep IgG	BAF4965	50 µg
C-Reactive Protein/CRP	Rat	Mouse IgG _{2B}	BAM17442	250 µg
DLL4	Mouse	Rat IgG _{2B}	BAM13892	250 µg
IL-10 Rβ	Mouse	Goat IgG	BAF5368	50 µg
MIS RII	Human	Sheep IgG	BAF4749	50 µg
Nepmucin/CD300LG	Mouse	Sheep IgG	BAF5554	50 µg
NGL-1	Human	Sheep IgG	BAF4899	50 µg
TGF-β RIII	Mouse	Goat IgG	BAF5034	50 µg
Tie-2	Human	Mouse IgG ₁	BAM3313	250 µg
Tryptase ε/BSSP-4	Mouse	Rat IgG _{2A}	BAM20591	250 µg
Uromodulin	Mouse	Sheep IgG	BAF5175	50 µg

Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Label	Catalog #	Size
4-1BB Ligand/TNFSF9	Human	Allophycocyanin	FAB2295A	100 Tests
CD3	Mouse	Allophycocyanin	FAB4841A	100 Tests
CD3	Mouse	PerCP	FAB4841C	100 Tests
CD4	Mouse	Allophycocyanin	FAB554A	100 Tests
CD4	Mouse	PerCP	FAB554C	100 Tests
CD8	Mouse	Allophycocyanin	FAB116A	100 Tests
CD8	Mouse	PerCP	FAB116C	100 Tests
CD44	Canine	Allophycocyanin	FAB5449A	100 Tests
CD200	Mouse	Allophycocyanin	FAB3355A	100 Tests
CD200	Mouse	Phycoerythrin	FAB3355P	100 Tests
Complement Component C5a R	Human	Allophycocyanin	FAB3648A	100 Tests
Complement Component C5a R	Human	Fluorescein	FAB3648F	100 Tests
Complement Component C5a R	Human	Phycoerythrin	FAB3648P	100 Tests
CX3CR1	Human	Fluorescein	FAB5204F	100 Tests
CX3CR1	Human	Phycoerythrin	FAB5204P	100 Tests
DLL1	Human	Allophycocyanin	FAB1818A	100 Tests
EMMPRIN/CD147	Mouse	Allophycocyanin	FAB772A	100 Tests
EMMPRIN/CD147	Mouse	Phycoerythrin	FAB772P	100 Tests
EMR2	Human	Allophycocyanin	FAB4894A	100 Tests
Glucagon	Human/Mouse	NorthernLights-557	NL1249R	500 µL
Gr-1/Ly-6G	Mouse	PerCP	FAB1037C	100 Tests

Labeled Antibodies

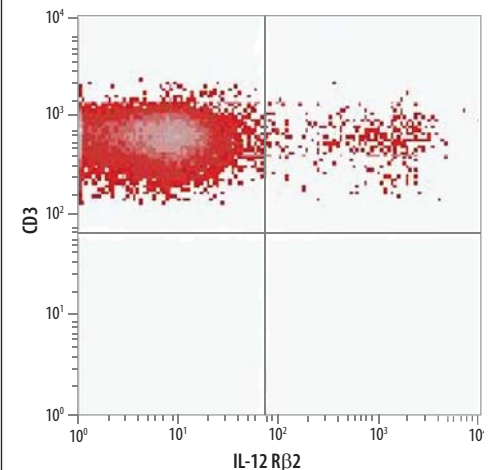
Fluorochrome-labeled Antibodies

Antibody	Species	Label	Catalog #	Size
IFN- γ R2	Human	Fluorescein	FAB773F	100 Tests
IL-4 R α	Human	Fluorescein	FAB230F	100 Tests
IL-12 R β 2	Human/Mouse	Phycoerythrin	FAB1959P	100 Tests
IL-23 R	Human	PerCP	FAB14001C	100 Tests
LAMP1/CD107a	Human	Allophycocyanin	IC4800A	100 Tests
LAMP1/CD107a	Human	Fluorescein	IC4800F	100 Tests
LAMP1/CD107a	Human	Phycoerythrin	IC4800P	100 Tests
Langerin	Human	Phycoerythrin	FAB2088P	100 Tests
M-CSF R	Mouse	Phycoerythrin	FAB3818P	100 Tests
Mouse IgM _{2b}	Mouse	PerCP	IC015C	200 Tests
NCAM-L1	Mouse	Allophycocyanin	FAB5674A	100 Tests
NCAM-L1	Mouse	Phycoerythrin	FAB5674P	100 Tests
Neuropilin-1/BDCA4	Mouse/Rat	Allophycocyanin	FAB566A	100 Tests
Neuropilin-1/BDCA4	Mouse/Rat	Fluorescein	FAB566F	100 Tests
Notch-1	Human	Allophycocyanin	FAB5317A	100 Tests
Notch-1	Human	Phycoerythrin	FAB5317P	100 Tests
Sca-1/Ly6	Mouse	Allophycocyanin	FAB1226A	100 Tests
SCF R/c-kit	Mouse	Allophycocyanin	FAB1356A	100 Tests
SSEA-1	Human/Mouse	PerCP	FAB2155C	100 Tests
TRA-1-60	Human	Phycoerythrin	FAB4770P	100 Tests
TROP-2	Human	Allophycocyanin	FAB650A	100 Tests
TROP-2	Human	Fluorescein	FAB650F	100 Tests
TROP-2	Human	Phycoerythrin	FAB650P	100 Tests
TROP-2	Mouse	Allophycocyanin	FAB1122A	100 Tests
TROP-2	Mouse	Fluorescein	FAB1122F	100 Tests
VCAM-1	Human	Allophycocyanin	FAB5649A	100 Tests
VCAM-1	Human	Phycoerythrin	FAB5649P	100 Tests
VCAM-1	Mouse	Allophycocyanin	FAB6432A	100 Tests

Characterizing Th Subtypes

CD4⁺ helper T cells differentiate into specialized effector subtypes when they are exposed to processes associated with the innate immune system response to pathogens. Effector CD4⁺ T cells secrete cytokines to promote immune defense. In general, T helper (Th)1 cells secrete IFN- γ , IL-2, and TNF- α to stimulate the clearance of intracellular pathogens, while Th2 cells secrete IL-4, IL-5, IL-10, and IL-13 to trigger the elimination of parasitic helminthes. Th17 cells likely evolved to respond to extracellular bacteria and they produce IL-17A, IL-17F, IL-22, IL-6, and CCL20. Two new and distinct Th subtypes have also been recently described: Th9 cells secrete IL-9 and IL-10, and Th22 cells secrete IL-22 but not IL-17. These CD4⁺ helper T cell subtypes can be phenotypically characterized by the antibodies to cell surface receptors (Figure 1) and transcription factors expressed (Table 1).

R&D Systems offers a range of fluorochrome-conjugated antibodies designed to characterize Th subtypes using flow cytometry. Please see pages 6 and 7 for details.



IL-12 R β 2 Expression in a Subset of CD3⁺ PBMCs. Th1-differentiated human peripheral blood mononuclear cells (PBMCs) were stained with PE conjugated anti-human IL-12 R β 2 (Catalog # FAB1959P) and APC-conjugated anti-human CD3 (Catalog # FAB100A). The quadrant markers were set based on isotype control staining (Catalog # IC002P).

Table 1. Markers Expressed by Th Subtypes

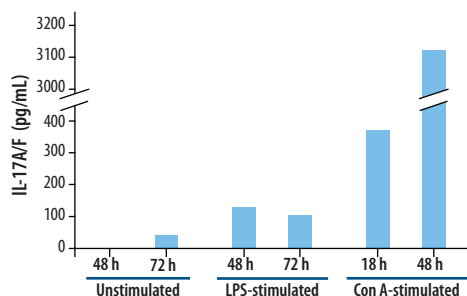
T cell subtypes	Receptors	Transcription Factors
Th1	IL-12R β , CCR5, CCR7	T-bet, STAT4
Th2	CCR3, CCR8, IL-4R, TIM1	GATA3, STAT6
Th17	IL-23 R, CCR2, CCR4, CCR6	ROR γ T
Th9	IL-4 R	unidentified, FoxP3(-)
Th22	CCR6, CCR10	unidentified

Mouse IL-17A/F Quantikine ELISA

IL-17A/F is a disulfide-linked heterodimeric glycoprotein.¹ Members of the IL-17 family exhibit the cysteine knot motif shared by a large protein superfamily. Although most superfamily members use three intrachain disulfide bonds to create the cysteine knot, the IL-17 family generates the same structure with only two disulfide links.²⁻⁴ IL-17A and IL-17F share 50% amino acid sequence identity and are 61% and 56% identical to the human proteins, respectively.

IL-17 dimers are produced by an activated subset of CD4⁺ T cells termed Th17 cells.^{1,5-7} IL-23 drives Th17 lymphocytes to produce these cytokines.^{5,8,9} Recent studies have identified that the widely expressed IL-17 receptors, IL-17 RA and IL-17 RC, form a heterodimer for the binding of IL-17A and IL-17F, and it is postulated that IL-17A/F also binds IL-17 RA.^{5,10,11} IL-17A/F is a biologically active protein that induces chemokine production and airway neutrophilia with intermediate potency between IL-17A (most potent) and IL-17F (least potent).⁶

R&D Systems now offers a mouse IL-17A/F Heterodimer Quantikine ELISA Kit (Catalog # M17AF0). This immunoassay is designed to measure IL-17A/F levels in cell culture supernates, serum, and plasma. Please see the table to the right for details.



Assessment of the Levels of IL-17A/F in Mouse Spleen Cell Culture Supernatants. Mouse splenocytes were isolated and cultured, either unstimulated or stimulated with lipopolysaccharide (LPS) or Concanavalin A (Con A), for 18, 48, or 72 hours as indicated. Aliquots of the cell culture supernates were assayed using the Quantikine Mouse IL-17A/F Heterodimer ELISA Kit (Catalog # M17AF0).

References

- Wright, J.F. *et al.* (2007) *J. Biol. Chem.* **282**:13447.
- Kawaguchi, M. *et al.* (2004) *J. Allergy Clin. Immunol.* **114**:1265.
- Kolls, J.K. & A. Linden (2004) *Immunity* **21**:467.
- Moseley, T.A. *et al.* (2003) *Cytokine Growth Factor Rev.* **14**:155.
- Cheung, P.F.Y. *et al.* (2008) *J. Immunol.* **180**:5625.
- Liang, S.C. *et al.* (2007) *J. Immunol.* **179**:7791.
- Ouyang, W. *et al.* (2008) *Immunity* **28**:454.
- Steinman, L. (2007) *Nat. Med.* **13**:139.
- Hunter, C.A. (2005) *Nat. Rev. Immunol.* **5**:521.
- Kuestner, R.E. *et al.* (2007) *J. Immunol.* **179**:5462.
- Chang, S.H. & C. Dong (2007) *Cell Res.* **17**:435.

Quantikine® ELISA Kits

Analyte	Species	Sensitivity	Range	Catalog #	Size
EGF R/ErbB1	Human	0.036 ng/mL	0.313-20 ng/mL	DEGFR0	1 Kit
IL-17A/F Heterodimer	Mouse	2.8 pg/mL	7.8-500 pg/mL	M17AF0	1 Kit
MBL	Human	0.029 ng/mL	0.156-10 ng/mL	DMBL00	1 Kit
Tie-1	Human	0.21 ng/mL	0.16-10 ng/mL	DTE100	1 Kit

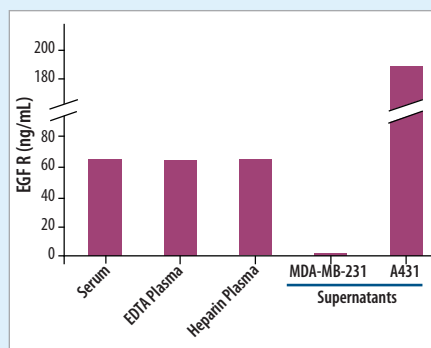
EGF Receptor Quantikine ELISA Kit

EGF R, also known as HER1 and ErbB1, is a 170 kDa transmembrane receptor tyrosine kinase. Its cytoplasmic domain contains a membrane-proximal tyrosine kinase domain followed by multiple serine, threonine, and tyrosine phosphorylation sites. EGF R is extensively and heterogeneously modified with N-linked glycosylation.¹ It is widely expressed on epithelial cells, although it is predominantly found in the gastrointestinal tract and breast.

EGF R binds the EGF family ligands: EGF, Amphiregulin, TGF- α , Betacellulin, Epiregulin, HB-EGF, and Epigen. Ligand binding induces receptor dimerization, tyrosine autophosphorylation, and internalization of the receptor-ligand complex.² EGF R signaling regulates multiple biological functions including cell proliferation, differentiation, motility, and apoptosis.³ Alterations in the structure, expression, and signaling of EGF R are involved in the development and metastasis of a wide variety of cancers.

Soluble receptors consisting of the extracellular domain of EGF R are generated by alternate splicing as well as by proteolytic cleavage.^{4,5} The soluble forms retain ligand binding capability and may dimerize with membrane bound EGF R, resulting in inhibition of its tyrosine kinase activity.⁵ Serum levels of the 110 kDa soluble EGF R are elevated in some cancers and reduced in others.^{6,7} Serum EGF R levels are also associated with responsiveness to chemotherapy and decreased life expectancy in carcinoma patients.^{7,8}

R&D Systems now offers a human EGF R/ErbB1 Quantikine ELISA Kit (Catalog # DEGFR0). The EGF R/ErbB1 Quantikine ELISA Kit can be used to assess the levels of human EGF R in cell culture supernatants, serum, plasma, and milk. For more information on this or other products related to cancer research, please visit our website at www.RnDSystems.com.



EGF R Levels in Human Serum, Plasma, and Carcinoma Cell Culture Supernatants. The levels of EGF R in human serum and plasma samples collected using either EDTA or heparin as an anticoagulant were assayed using the EGF R Quantikine ELISA Kit (Catalog # DEGFR0). The graph shows the mean levels of EGF R detected in each sample type (n=34). EGF R levels were also measured in aliquots of cell culture supernatants removed from human MDA-MB-231 breast or A431 epidermoid carcinoma cells.

References

- Stroop, C.J. *et al.* (2000) *Glycobiology* **10**:901.
- Rowinsky, E.K. (2004) *Annu. Rev. Med.* **55**:433.
- Reiter, J.L. *et al.* (2001) *Genomics* **71**:1.
- Sanderson, M.P. *et al.* (2008) *J. Cell. Biochem.* **103**:1783.
- Oh, M.J. *et al.* (2000) *Clin. Cancer Res.* **6**:4760.
- Lemos-Gonzalez, Y. *et al.* (2007) *Br. J. Cancer* **96**:1569.
- Zampino, M.G. *et al.* (2008) *Cancer Chemother. Pharmacol.* **63**:139.
- Souder, C. *et al.* (2006) *Cancer* **107**:2337.

Fluorokine® Flow Cytometry Kits

Labeled Ligands to Measure Receptor Density

Analyte	Label	Species	Catalog #	Size
Activin A	Biotin	Human	NFACTA	100 Tests
IL-9	Biotin	Mouse	NFMIL9	100 Tests
IL-12	Biotin	Mouse	NFMIL12	100 Tests

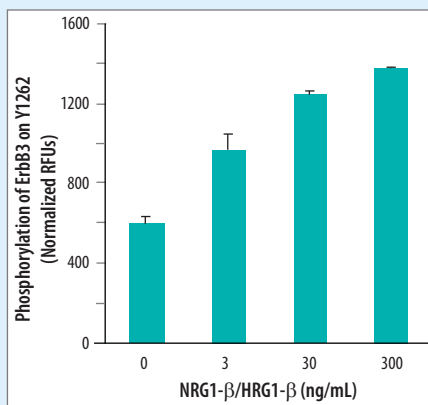
Cell-Based ELISA Kits

Analyte	Species	Catalog #	Size
Phospho-ErbB2/HER2 (Y1196)	Human	KCB4438	1 Kit
Phospho-ErbB3/HER3 (Y1262)	Human	KCB5677	1 Kit

Phospho-ErbB3 (Y1262) & Phospho-ErbB2 (Y1196) Cell-Based ELISAs

ErbB3 (also known as Her3) is a type I transmembrane growth factor receptor and member of the human epidermal growth factor receptor (Her) family. ErbB3 is unique among Her family members in that it contains a defective kinase domain¹, and is therefore active only as a partner in a heterodimer complex. Despite its lack of intrinsic kinase activity, the heterodimers can be quite potent. The ErbB2/ErbB3 complex is considered the most active ErbB signaling dimer for the stimulation of downstream pathways.² In addition, monomeric ErbB3 serves as a low affinity receptor for the heregulins (HRG), while ErbB2/ErbB3 heterodimers form a high affinity receptor complex. Phosphorylation of ErbB3 at Y1262 following ligand binding generates a binding site for the Grb2 adaptor protein.³

R&D Systems now offers the human phospho-ErbB2 (Y1196) and phospho-ErbB3 (Y1262) Cell-Based ELISAs for the measurement of ErbB phosphorylation in intact cells without the need for lysate preparation. The assays measure both the phosphorylated and total protein in the same microplate well, allowing for normalization of well-to-well variations using ratiometric analyses. For more information and a complete listing of available Cell-Based ELISAs, please visit our website at www.RnDSystems.com/go/CellBasedELISA.



NRG1-β/HRG1-β induced ErbB3 (Y1262) Phosphorylation in Human Breast Adenocarcinoma Cells. MCF-7 cells were treated with the indicated amounts of recombinant human NRG1-β/HRG1-β (Catalog # 396-HB). Phosphorylation of ErbB3 on Y1262 was determined and normalized to total ErbB3 in the same wells using the Human Phospho-ErbB3 (Y1262) Cell-Based ELISA (Catalog # KCB5677).

References

- Guy, P.M. *et al.* (1994) Proc. Natl. Acad. Sci. USA **91**:8132.
- Citri, A. *et al.* (2003) Exp. Cell Res. **284**:54.
- Schulze, W.X. *et al.* (2005) Mol. Syst. Biol. **1**:2005.0008.

Osteoactivin DuoSet® ELISA Development Kit

Osteoactivin plays a variety of roles in different tissues. It is a variably glycosylated transmembrane protein that is localized within the secretory system as well as on the cell surface.^{1,2} The extracellular/luminal region contains a heparin binding region, an RGD integrin binding motif, and a PKD domain. The cytoplasmic region contains an ITAM motif and a lysosomal targeting sequence. Transmembrane Osteoactivin functions as an adhesion molecule by interacting with Integrins (β1 and β3) and heparan sulfate proteoglycans.^{2,3} Juxtamembrane proteolytic cleavage results in the release of nearly the entire extracellular region.⁴

Osteoactivin plays a role in bone metabolism in both osteoblasts and osteoclasts. In osteoblasts it is induced following BMP-2 exposure and functions in these cells as a BMP-2 effector by promoting bone matrix production and mineralization.⁵ Distinct glycoforms of Osteoactivin are induced in TRANCE/RANK L-stimulated osteoclasts, prompting their differentiation to an active bone-resorbing phenotype.^{1,2} Osteoactivin also regulates fibroblast activity and remodeling of the extracellular matrix. Skeletal muscle denervation induces Osteoactivin shedding from muscle fibers followed by MMP-3 and ADAM12 expression in local fibroblasts.^{1,2} Osteoactivin protects against denervation-induced myofiber degeneration as well as the development of hepatic fibrosis induced by choline deficiency.^{1,2} It is overexpressed in some breast cancer cells where it induces the upregulation of MMP-3 and promotes metastasis to bone.^{1,2} In activated macrophages, Osteoactivin functions as a negative regulator of inflammatory responses.¹ In pigmented cells it is important for melanosome integrity.⁹ Mutations in Osteoactivin are associated with iris pigment dispersion and pigmentary glaucoma.⁹

R&D Systems' new human Osteoactivin DuoSet ELISA Development Kit contains the basic components required for the development of approximately 15 sandwich ELISAs. Please see page 11 for more information.

References

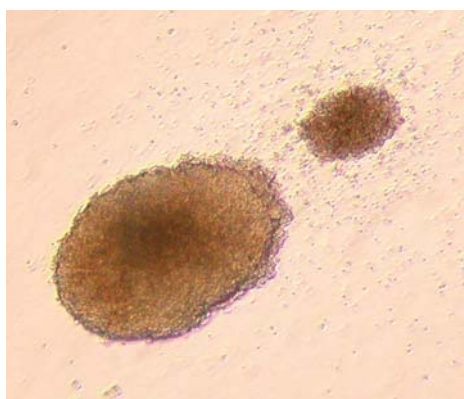
- Ripoll, V.M. *et al.* (2007) J. Immunol. **178**:6557.
- Shikano, S. *et al.* (2001) J. Biol. Chem. **276**:8125.
- Sheng, M.H.-C. *et al.* (2008) FEBS Lett. **582**:1451.
- Furochi, H. *et al.* (2007) FEBS Lett. **581**:5743.
- Abdelmagid, S.M. *et al.* (2007) J. Cell. Physiol. **210**:26.
- Furochi, H. *et al.* (2007) J. Med. Invest. **54**:248.
- Abe, H. *et al.* (2007) Biochem. Biophys. Res. Commun. **356**:610.
- Rose, A.A.N. *et al.* (2007) Mol. Cancer Res. **5**:1001.
- Anderson, M.G. *et al.* (2002) Nat. Genet. **30**:81.



The CFC Assay for Pre-B Cells

The colony forming cell (CFC) assay is an *in vitro* quantitative assay used to study the development of hematopoietic lineage cells. The assay is based on the ability of hematopoietic progenitors to proliferate and differentiate into colonies in a semi-solid medium in response to cytokine stimulation. The colonies formed can be enumerated and characterized according to their unique morphology and color.

R&D Systems has developed a special formulated and optimized methylcellulose complete media for performing CFC assay of pre-B progenitor cells of mouse origin (Catalog # HSC009). Please see The R&D Systems website at www.RnDSystems.com/go/Methylcellulose for a complete listing of available products designed for the CFC assay, as well as detailed protocols for both human and mouse cells.



The CFC Assay used in the Differentiation of Pre-B Cells.

Clonogenic progenitors of B cells that give rise to a homogenous population of B cells were produced using Mouse Methylcellulose Complete Media for Pre-B Cells (Catalog # HSC009).

ExactaChIP™ Chromatin Immunoprecipitation Kits

Analyte	Species	Catalog #	Size
Brachyury	Human	ECP2085	1 Kit
Histone H3, Acetyl-specific Lys9/Lys14	Human	ECP5214	1 Kit
Histone H4, Acetylated Lys4/Lys7/Lys11/Lys15	Human	ECP5215	1 Kit
Olig2	Human	ECP2418	1 Kit
RUNX2/CBFA1	Human	ECP2006	1 Kit
c-Rel	Human	ECP2699	1 Kit
SOX17	Mouse	ECP1924	1 Kit
T-bet/TBX21	Human	ECP5385	1 Kit

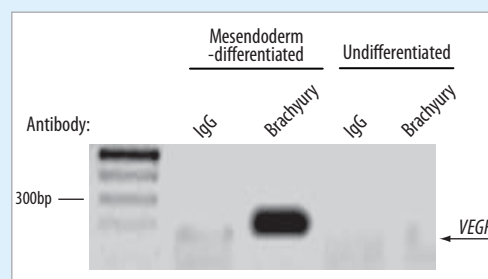
ExactaChIP™ Chromatin Immunoprecipitation Kits

Investigation of the molecular mechanisms underlying transcriptional regulation, particularly in pluripotent stem cells, has recently received a significant amount of attention. These studies involve the systematic identification of key target genes. One assay that has been widely used for this purpose is the chromatin immunoprecipitation (ChIP) assay. R&D Systems has recently released new ExactaChIP Kits targeting critical transcription factors that regulate stem cell fate (see table above). Each kit contains all

of the major components required for running a successful ChIP assay including biotinylated analyte-specific and host control (IgG) antibodies, a positive control primer set to serve as a PCR control, chelating resin solution, and buffers. The ExactaChIP Kit protocol has been optimized to provide consistent results and requires less than 3 hours to perform.

For more information, visit our website at www.RnDSystems.com/go/ExactaChIP.

- ✓ Antibodies have been validated for chromatin immunoprecipitation
- ✓ Fast – results can be obtained in less than 3 hours
- ✓ A negative control antibody is included with each kit
- ✓ Consistent results from one experiment to the next
- ✓ Detailed, easy to follow protocols & troubleshooting guide
- ✓ Positive control primer set included with each kit provides confidence in the experimental results obtained



Brachyury Binds to the VEGF Promoter in Mesendoderm-differentiated BG01V Human Embryonic Stem Cells. Brachyury binding to the VEGF promoter was assessed in lysates from mesendoderm-differentiated or undifferentiated BG01V human embryonic stem cells using the human Brachyury ExactaChIP Chromatin Immunoprecipitation Kit (Catalog # ECP2085). Briefly, cells were fixed, lysed, and sonicated according to the ExactaChIP protocol. Cell lysates were incubated with either biotinylated anti-human Brachyury polyclonal antibody or biotinylated goat IgG (both provided in the kit) followed by MagCollect™ Streptavidin Ferrofluid (Catalog # MAG999). DNA was purified from the immunoprecipitates and the VEGF promoter was detected by standard PCR. The first lane on the gel is the DNA marker.

ELISA Development Systems

DuoSet® ELISA Development Systems

Analyte	Species	Catalog #	*Reagents for
Pro-Cathepsin B	Human	DY953	15 Plates
Chitinase 3-like 1	Mouse	DY2649	15 Plates
C-Reactive Protein/CRP	Rat	DY1744	15 Plates
DLL1	Human	DY1818	15 Plates
Endocan	Mouse	DY1999	15 Plates
EPCR	Human	DY2245	15 Plates
Total Legumain	Human	DY4769	15 Plates
Mesothelin Propeptide/MPF	Human	DY3448	15 Plates
Osteoactivin/GPNMB	Human	DY2550	15 Plates
Thrombospondin-1	Human	DY3074	15 Plates

DuoSet IC (Intracellular) ELISA Development Systems

Analyte	Species	Catalog #	*Reagents for
Total IGF-II R	Human	DYC5537-2	2 Plates
Total MDM2	Human	DYC1244-2	2 Plates
Phospho-MKK3 (S218/T222)	Human	DYC5585-2	2 Plates
Total PON2	Human	DYC4344-2	2 Plates
Total PON3	Human	DYC4345-2	2 Plates
Total Ret	Human	DYC1168-2	2 Plates

ELISpot Kits

Analyte	Species	Catalog #	Size
TNF- α /TNFSF1A	Equine	EL1814	1 Kit
IFN- γ /IL-17 Dual Color	Human	ELDS219	1 Kit

Cell Culture & Stem Cell Reagents

Product	Species	Catalog #	Size
Mesenchymal Stem Cell Antibody Marker Panel <i>Antibodies included: Sca-1, CD106, CD105, CD73, CD29, CD44, CD11b, and CD45</i>	Human	SC018	1 Kit
Methylcellulose Complete Media for Pre-B Cells	Mouse	HSC009	100 mL
Cultrex® High Protein Concentration Basement Membrane Extract (HC20+™) Pathclear®		3444-005-02	5 mL

Cultrex and Pathclear are registered trademarks of Trevigen. HC20+ is a trademark of Trevigen.

Recombinant Sulfotransferase Proteins & Antibodies

Sulfation is a ubiquitous post-translational modification that regulates the biological activity of a wide variety of molecules. The reaction is catalyzed by sulfotransferases using 3'-phosphoadenosine-5'-phosphosulfate (PAPS) as the sulfate donor.¹ There are 48 human sulfotransferases that can be divided into two major groups according to their sub-cellular localization: those found in the cytoplasm and those found in the Golgi apparatus.² Cytosolic sulfotransferases, commonly designated as SULTs, are primarily involved in modifying small molecules, such as steroids, neurotransmitters, and xenobiotics.³ Golgi resident sulfotransferases are involved in modifying numerous glycans and proteins both on the cell membrane, and in the extracellular matrix.² Glycan sulfation is known to affect hormone pharmacokinetics, growth factor and cytokine activity, and viral and bacterial invasion.^{4,6}

R&D Systems is now offering recombinant mouse Carbohydrate Sulfotransferase 3 (Catalog # 5356-ST), recombinant mouse Carbohydrate Sulfotransferase 4 (Catalog # 5547-ST), and recombinant human Cytosolic Sulfotransferase 1E1 (Catalog # 5545-ST; page 2), in addition to several new anti-human Carbohydrate Sulfotransferase polyclonal antibodies (page 3). These products add to the rapidly expanding line of sulfotransferase-related products available from R&D Systems (Table 1).

Table 1.
Recombinant Sulfotransferase Proteins and Antibodies

Molecules	Proteins	Antibodies
CHST1	Human, Mouse	Human <i>New!</i>
CHST2	Human	Human <i>New!</i>
CHST3	Mouse <i>New!</i>	
CHST4	Human, Mouse <i>New!</i>	Human <i>New!</i>
CHST5	Mouse	Human <i>New!</i>
CHST6	Human	
CHST7	Mouse	Mouse
GalNAc4S-6ST	Human	Human
HS6ST1	Human	
HS6ST2		Human
HS6ST3	Mouse	
TPST1	Human	
SULT1E1	Human <i>New!</i>	

References

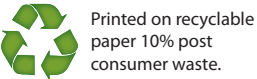
- Strott, C.A. (2002) *Endocr. Rev.* **23**:703.
- Graffenried, C.L. *et al.* (2004) *Proc. Natl. Acad. Sci. USA* **101**:16715.
- Gamage, N. *et al.* (2006) *Toxicol. Sci.* **90**:5.
- Lortat-Jacob, H. *et al.* (2002) *Proc. Natl. Acad. Sci. USA* **99**:1229.
- Shukla, D. *et al.* (1999) *Cell* **99**:13.
- Pethe, K. *et al.* (2001) *Nature* **412**:190.



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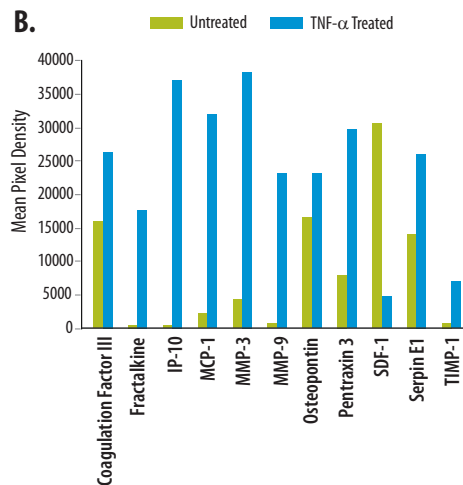
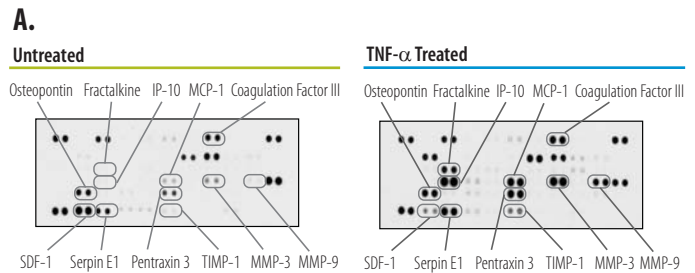
NP091_SEP

Proteome Profiler™ Antibody Arrays: Mouse Angiogenesis & Phospho-Receptor Tyrosine Kinase (RTK)

R&D Systems Proteome Profiler Antibody Arrays allow for the relative measurement of multiple proteins in a single sample without the need for specialized equipment. R&D Systems is now offering a new Mouse Angiogenesis Array (Catalog #ARY015) to simultaneously assess the relative expression levels of 53 angiogenesis-related proteins in a single sample of cell culture supernatant, cell lysate, tissue lysate, or serum. Also available is a Mouse Phospho-RTK Array (Catalog # ARY014), capable of detecting 39 phosphorylated receptor tyrosine kinases in a single sample of cell lysate. This array is designed to simultaneously detect the relative levels of tyrosine phosphorylation of multiple mouse RTKs involved in key developmental or pathological processes.

For more information on these or other available arrays, please visit our website at www.RnDSystems.com/go/ProteomeProfiler.

Product	Species	Catalog #	Size
Angiogenesis Array Kit	Mouse	ARY015	1 Kit
<ul style="list-style-type: none"> • ADAMTS1 • Amphiregulin • Angiogenin • Angiopoietin-1 • Angiopoietin-3 • CCL2/JE/MCP-1 • CCL3/MIP-1α • CXCL1/KC • CXCL10/IP-10/CRG-2 • CXCL12/SDF-1 • CXCL16 • CXCL4/PF4 • Cyr61/CNN1/IGFBP-10 • DLL4 • DPPIV/CD26 • EGF • Endoglin/CD105 • Endostatin/Collagen XVIII • Endothelin-1 • FGF acidic • FGF basic • FGF-7/KGF • Fractalkine • GM-CSF • HB-EGF • HGF • IGFBP-1 • IGFBP-2 • IGFBP-3 • IL-1α • IL-1β • IL-10 • Leptin • MMP-3 (pro and mature) • MMP-8 (pro) • MMP-9 (pro and active) • NOV/CNN3/IGFBP-9 • Osteopontin • PD-ECGF • PDGF-AA • PDGF-AB/BB • Pentraxin-3 • PIGF-2 • Prolactin • Proliferin • Serpin E1/PAI-1 • Serpin F1/PEDF • Thrombospondin-2 • TIMP-1 • TIMP-4 • Tissue Factor/Factor III • VEGF • VEGF-B 			
Phospho-RTK Array Kit	Mouse	ARY014	1 Kit
<ul style="list-style-type: none"> • Axl • Dtk • EGF R • EphA1 • EphA2 • EphA3 • EphA6 • EphA7 • EphA8 • EphB1 • EphB2 • EphB4 • EphB6 • ErbB2 • ErbB3 • ErbB4 • FGF R2 (IIc) • FGF R3 • FGF R4 • Flt-3 • HGF R • IGF-1 R • Insulin R • M-CSF R • Mer • MSP R • MuSK • PDGF Rα • PDGF Rβ • c-RET • SCF R • Tie-1 • Tie-2 • TrkA • TrkB • TrkC • VEGF R1 • VEGF R2 • VEGF R3 			



Multiple Proteins in TNF-α-treated Balb/3T3 Cells were Assessed using the Mouse Angiogenesis Array. **A.** The Proteome Profiler Mouse Angiogenesis Array (Catalog # ARY015) was used to simultaneously assess the relative levels of 53 angiogenesis-related proteins in lysates from Balb/3T3 mouse embryonic fibroblasts that were either untreated or treated with mouse TNF-α (Catalog # 410-MT) for 24 hours. **B.** Histogram profiles for select proteins were generated by quantifying the mean spot pixel densities from the arrays using image software analysis.