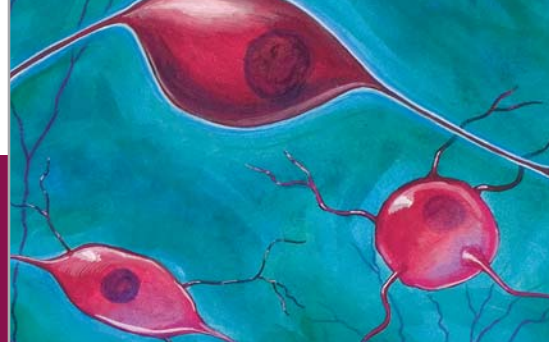


New Products March 2009



Human FABP1/L-FABP ELISA Kit

Fatty acid binding protein 1 (FABP1), also known as liver-type (L-) FABP, is a 14 kDa member of the FABP protein family. FABPs function as tissue specific intracellular fatty acid chaperones for β -oxidation and lipoprotein biogenesis.^{1,2} FABP1 is highly expressed in the liver and proximal small intestine where it is particularly important under fasting conditions.³ It binds a wide variety of hydrophobic ligands in addition to long and medium chain length fatty acids.¹ Fatty acids and hypolipidemic fibrate agonists of the nuclear receptor PPAR induce nuclear targeting of FABP1 and PPAR activation. This results in the upregulation of FABP1 itself and many other genes involved in fatty acid metabolism.⁴⁻⁷ Increased amounts of FABP1 are released into the serum during hepatitis, liver transplant rejection, and fibrate treatment.⁷⁻⁹

Circulating FABP1 is cleared by the kidney via the endocytic receptor, Megalin.¹⁰ Normally weak renal expression of FABP1 is upregulated by fibrates and nephrotoxic drugs, protein overload, and renal transplantation.^{6,7,11,12} FABP1 upregulation appears to be a protective response to these situations.¹² In parallel, dramatically increased levels of FABP1 are

released into the urine.^{6,7,11,12} The increase of urinary FABP1 has also been shown to correlate with the severity of acute kidney injury.^{8,11,13} Determination of urinary FABP1 levels may be a useful adjunct to conventional measurements of renal function such as urinary protein, creatinine clearance, blood urea nitrogen, and urinary α 1-microglobulin.^{6,8,11-13}

R&D Systems offers a new, highly sensitive ELISA kit capable of accurately quantifying the levels of FABP1 in human urine.

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ELISA/Assay Kits

Analyte	Species	Sensitivity	Range	Catalog #	Size
Activin A	Human/Mouse/Rat	7.85 pg/mL	15.6-1000 pg/mL	DAC00B	1 Kit
Coagulation Factor III/Tissue Factor	Human	2.05 pg/mL	7.8-500 pg/mL	DCF300	1 Kit
FABP1/L-FABP	Human	3 ng/mL	6.25-400 ng/mL	Z-001	1 Kit
MMP-2	Human	0.289 ng/mL	0.75-50 ng/mL	DMP2F0	1 Kit

PlusCollect™ Cell Selection & Detection Kits

Analyte	Species	Catalog #	Size
Podocalyxin	Human	PLS1658	1 Kit
Tie-2	Human	PLS313	1 Kit

ExactaChIP™ Chromatin Immunoprecipitation Kits

Analyte	Species	Catalog #	Size
BMI-1	Human	ECP3334	1 Kit
Notch-1	Human	ECP3647	1 Kit
Smad2/3	Human	ECP3797	1 Kit
Snail	Human	ECP3639	1 Kit

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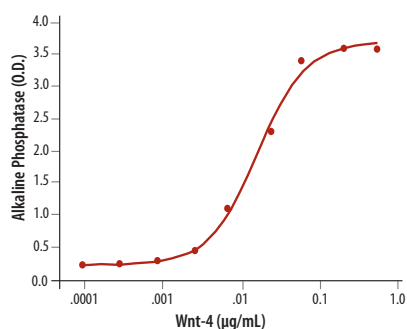




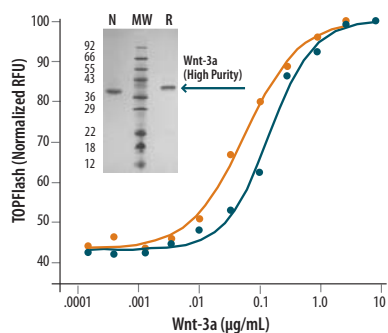
Wnt-3a & Wnt-4

Wnts participate in various aspects of embryonic development, stem cell self-renewal, and adult tissue homeostasis.¹ Wnt-3a is essential for development of the nervous system, somites, and liver.^{2,3} It has also been shown to promote self-renewal of neural and hematopoietic progenitor cells.^{4,5} Wnt-4 is necessary for proper kidney tubulogenesis, sex determination, and promotes osteoblast differentiation.^{2,6,7}

R&D Systems now offers recombinant mouse Wnt-4 (Catalog # 475-WN), human Wnt-3a (Catalog # 5036-WN), and a highly purified form of human Wnt-3a (Catalog # 5036-WNP; >90% pure by SDS PAGE).



Mouse Wnt-4 Promotes Osteoblast Differentiation. Increasing concentrations of recombinant mouse Wnt-4 (Catalog # 475-WN) promotes alkaline phosphatase production in the mouse pre-osteoblastic cell line, MC3T3-E1.



Human Wnt-3a Induces β -Catenin-responsive Transcriptional Activation. Recombinant human Wnt-3a (Catalog # 5036-WN; green) and recombinant human Wnt-3a (High Purity; Catalog # 5036-WNP; orange) both stimulate β -Catenin-responsive transcriptional activation assessed using the TOPflash TCF reporter in the human kidney cell line, HEK293T. Purity is highlighted in a silver-stained, SDS-PAGE gel loaded with 1 µg/lane Wnt-3a (High Purity) under both non-reducing (N) and reducing (R) conditions (inset). MW = Molecular weight markers

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Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Adiponectin/Acrp30	Mouse	NS0	5095-AC-050	50 µg
Annexin A6	Human	<i>E. coli</i>	5186-A6-050	50 µg
BoNT-B Light Chain	<i>C. botulinum</i>	<i>E. coli</i>	5420-ZN-010	10 µg
BoNT-E Light Chain	<i>C. botulinum</i>	<i>E. coli</i>	5424-ZN-010	10 µg
CD39L4/ENTPD5	Human	CHO	5297-EN-010	10 µg
CD99, Fc Chimera	Mouse	NS0	3905-CD-050	50 µg
Chitotriosidase/CHIT1	Mouse	NS0	5325-GH-010	10 µg
Carbohydrate Sulfotransferase 1/CHST1	Human	CHO	5316-ST-020	20 µg
Carbohydrate Sulfotransferase 1/CHST1	Mouse	CHO	5355-ST-020	20 µg
Carbohydrate Sulfotransferase 4/CHST4	Human	CHO	5357-ST-020	20 µg
Carbohydrate Sulfotransferase 5/CHST5	Mouse	CHO	5210-ST-020	20 µg
Carbohydrate Sulfotransferase 6/CHST6	Human	CHO	5326-ST-020	20 µg
Clusterin	Human	NS0	2937-HS-050	50 µg
Clusterin	Mouse	NS0	2747-HS-050	50 µg
Collagen XXIII α 1/COL23A1	Human	NS0	4165-CL-050	50 µg
Contactin-2/TAG1	Mouse	NS0	4439-CN-050	50 µg
DPP9	Human	Sf21	5419-SE-010	10 µg
Endo- β -N-acetylglucosaminidase F1/Endo F1	<i>F. meningosepticum</i>	<i>E. coli</i>	5220-GH-050	50 µg
Endo- β -N-acetylglucosaminidase H/Endo H	<i>S. plicatus</i>	<i>E. coli</i>	5224-GH-050	50 µg
ENPP-2/Autotaxin	Human	NS0	5255-EN-010	10 µg
EphB2, Fc Chimera	Human	NS0	5189-B2-050	50 µg
FLRT1	Human	NS0	2794-FL-050	50 µg
FLRT2	Human	NS0	2877-FL-050	50 µg
FLRT3	Human	NS0	2795-FL-050	50 µg
gp130, Fc Chimera	Rat	NS0	5029-RG-100	100 µg
HS6ST3	Mouse	CHO	5406-ST-020	20 µg
IL-17A/F Heterodimer	Human	<i>E. coli</i>	5194-IL-025	25 µg
IL-28 R α /IFN- λ R1, Fc Chimera	Human	NS0	5260-MR-050	50 µg
IL-28B	Human	CHO	5259-IL-025	25 µg
IL-34	Human	NS0	5265-IL-010	10 µg
Jagged 1, Fc Chimera	Human	CHO	1277-JG-050	50 µg
Kilon	Human	NS0	5394-SR-050	50 µg
Klotho	Human	NS0	5334-KL-025	25 µg
LEDGF	Human	<i>E. coli</i>	3468-LE-050	50 µg
LRRTM1	Human	NS0	4897-LR-050	50 µg
MDGA1	Human	NS0	5055-MD-050	50 µg
MDGA2	Human	NS0	5184-MD-050	50 µg
MMP-9	Rat	NS0	5427-MM-010	10 µg
Neurexin 1 β /NXRN1 β , Fc Chimera	Human	NS0	5268-NX-050	50 µg
Neurexin 3 β /NRXN3 β , Fc Chimera	Human	NS0	5269-NX-050	50 µg
NGL-1	Human	NS0	4899-NR-050	50 µg
Notch-1, Fc Chimera	Mouse	CHO	5267-TK-050	50 µg
Phospholipase A2 Group IIA/PLA2G2A	Human	Sf21	5374-PL-010	10 µg

Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Progranulin	Human	NS0	2420-PG-050	50 µg
QBRICK, Fc Chimera	Human	CHO	5100-QB-050	50 µg
Resistin	Mouse	NS0	5335-RN-050	50 µg
Slit1	Mouse	CHO	5199-SL-050	50 µg
SorCS2	Human	NS0	4238-SR-050	50 µg
SPARC/Osteonectin	Human	NS0	941-SP-050	50 µg
Sphingosine Kinase 2/SPHK2	Human	Sf21	5298-SK-010	10 µg
TAFAl/FAM19A1	Human	<i>E. coli</i>	5154-TA-050	50 µg
TCAM-1	Mouse	NS0	3546-TC-050	50 µg
Tenascin C	Human	NS0	3358-TC-050	50 µg
TGF-β RIII	Mouse	NS0	5034-R3-050	50 µg
Transglutaminase 7/TGM7	Human	Sf21	5426-TG-010	10 µg
Wnt-3a	Human	CHO	5036-WN-010	10 µg
Wnt-3a (High Purity)	Human	CHO	5036-WNP-010	10 µg
Wnt-4	Mouse	CHO	475-WN-005	5 µg

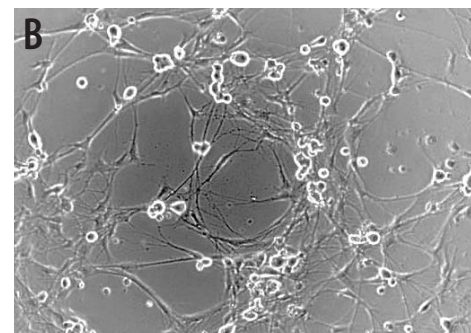
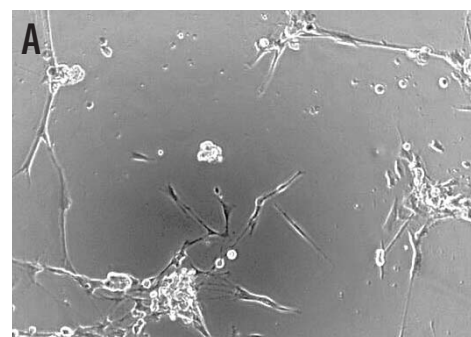
Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
Adiponutrin/ADPN	Human	Sheep IgG	AF5208	100 µg
AP-2ε	Human	Goat IgG	AF5060	100 µg
ASAHL	Mouse	Goat IgG	AF4886	100 µg
ATG3	Human/Mouse/Rat	Sheep IgG	AF5450	100 µg
ATG10	Human	Sheep IgG	AF5464	100 µg
BCR	Human	Sheep IgG	AF5129	100 µg
Beclin1	Human/Mouse	Sheep IgG	AF5295	100 µg
c-Abl	Human	Goat IgG	AF5414	100 µg
Calsyntenin-3	Human	Sheep IgG	AF5244	100 µg
CD38	Human	Sheep IgG	AF2404	100 µg
CD38	Mouse	Sheep IgG	AF4947	100 µg
CD99-L2	Mouse	Goat IgG	AF5024	100 µg
CD157	Mouse	Sheep IgG	AF4710	100 µg
CDNF	Human	Goat IgG	AF5097	100 µg
Chitotriosidase/CHIT1	Mouse	Sheep IgG	AF5325	100 µg
Carbohydrate Sulfotransferase 7/CHST7	Mouse	Goat IgG	AF5108	100 µg
CLEC10A/CD301	Human	Goat IgG	AF4888	100 µg
Cochlin	Human	Sheep IgG	AF5249	100 µg
CSE1L/CAS	Human/Mouse/Rat	Goat IgG	AF5288	100 µg
Cyclophilin B	Human/Mouse/Rat	Goat IgG	AF5410	100 µg
DAPK3/ZIPK	Human	Goat IgG	AF5290	100 µg
DMC/VCC-1	Human	Sheep IgG	AF4207	100 µg
ENPP-2/Autotaxin	Human	Goat IgG	AF5255	100 µg
Phospho-ErbB2/HER2 (Y1196)	Human	Rabbit IgG	AF4438	100 µg
Follistatin-like 4	Human	Sheep IgG	AF4890	100 µg
FoxM1	Human	Sheep IgG	AF3975	100 µg
Phospho-FRS2 (Y436)	Human/Mouse/Rat	Rabbit IgG	AF5126	100 µg
Galectin-10	Human	Goat IgG	AF5447	100 µg

continued on page 4.

Slit1

Slit1 is one of three members of the Slit family of secreted axon guidance molecules that are ligands for Robo receptors.¹ Slit1 is the most brain-specific of the family in both fetal and adult life, while other Slits and Robos are more widely expressed. Slit1 and Slit2 (or in some cases Slit3) are expressed in complementary locations during development of the optic and olfactory tracts and the forebrain. Slits appear to work together to induce Robo-mediated guidance of retinal, olfactory, hippocampal, and motor axons.²⁻⁵ Slit1 promotes dendrite growth and branching of cortical neurons.⁶ In addition to its putative roles in regulating neurite outgrowth and morphology, Slit1 may act as a tumor suppressor.⁷



Slit1 Enhances Neurite Outgrowth. **A:** Chick dorsal root ganglion neurons were grown on nitrocellulose-coated plates in the presence of recombinant human β -NGF (Catalog # 256-GF). **B:** Neurite outgrowth is enhanced when the plate is also coated with recombinant mouse Slit1 (Catalog # 5199-SL; 90 ng/3 μ L for 2 hours).

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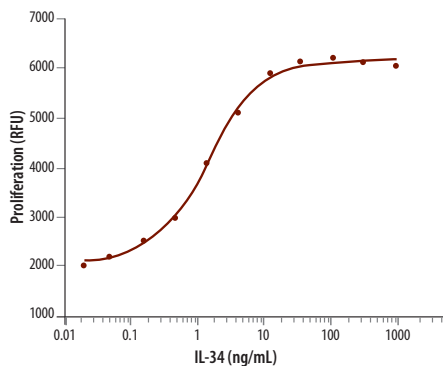


Interleukin-34

Interleukin-34 (IL-34) is a newly discovered cytokine that is secreted as a homodimer consisting of 39 kDa monomers.¹ Human IL-34 is synthesized as a 242 amino acid (aa) precursor that contains a 20 aa signal sequence and a 222 aa mature chain, which contains one potential site for N-linked glycosylation. The aa sequence of human IL-34 shares a sequence identity of 99.6%, 72%, and 71% with that of the chimpanzee, rat, and mouse IL-34 orthologs, respectively. In addition, the IL-34 gene is syntenic in the human, chimpanzee, rat, and mouse genomes.¹ IL-34 mRNA is expressed in various tissues, including heart, brain, lung, liver, kidney, spleen, thymus, testes, ovary, small intestine, prostate, and colon, and is most abundant in the spleen.¹

The receptor for IL-34 is M-CSF R (also known as CSF-1R), which is also the receptor for M-CSF.¹ IL-34 stimulates monocyte viability and phosphorylation of extracellular signal-regulated kinases-1 and -2 (ERK1/2) in human monocytes.¹ In addition, it promotes the development of the colony-forming unit-macrophage (CFU-M), a macrophage progenitor, in human bone marrow cultures.¹

R&D Systems now offers active recombinant human IL-34. Please see the table on page 2 for details.



Proliferation of Human Peripheral Blood Mononuclear (PBMCs) in Response to Human IL-34. Human PBMCs were treated with the indicated concentrations of recombinant human IL-34 (Catalog # 5265-IL). Relative cell number was determined in a fluorometric assay using the redox sensitive dye, Resazurin (Catalog # AR002).

References

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Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
<i>continued from page 3.</i>				
Girdin	Human	Sheep IgG	AF5345	100 µg
HABP1/C1QBP	Human/Mouse/Rat	Goat IgG	AF5359	100 µg
IL-9 R	Rat	Goat IgG	AF4896	100 µg
IL-28A	Mouse	Sheep IgG	AF4635	100 µg
IMP2	Human/Mouse/Rat	Goat IgG	AF5305	100 µg
Intelectin-2	Mouse	Sheep IgG	AF5358	100 µg
LRRTM3	Human	Sheep IgG	AF4898	100 µg
Mena	Human	Goat IgG	AF5304	100 µg
Miz-1/ZBTB17	Human	Goat IgG	AF3760	100 µg
Neuroplastin	Human	Sheep IgG	AF5174	100 µg
Nicastrin	Human	Sheep IgG	AF5378	100 µg
Ninjurin-2	Human	Sheep IgG	AF5056	100 µg
Phospholipase A2 Group VII/PLA2G7	Human	Goat IgG	AF5106	100 µg
Progesterone R/NR3C3	Human	Sheep IgG	AF5415	100 µg
PTPRT	Human	Goat IgG	AF3697	100 µg
PYK2/FAK2	Human	Sheep IgG	AF4589	100 µg
B-Raf	Human	Goat IgG	AF3424	100 µg
SCARA5	Human	Sheep IgG	AF4900	100 µg
SHIP2	Human/Mouse/Rat	Sheep IgG	AF5389	100 µg
SIT1	Human	Goat IgG	AF5016	100 µg
SLAM/CD150	Human	Sheep IgG	AF164	100 µg
SMOC-2	Human/Mouse	Sheep IgG	AF5140	100 µg
TEM7	Human	Sheep IgG	AF5327	100 µg
TNFRH3/TNFRSF26	Mouse	Sheep IgG	AF5330	100 µg
VAMP-8	Human	Goat IgG	AF5354	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
5'-Nucleotidase/CD73	Mouse	496424	MAB44881	100 µg
ADAM22	Human	498805	MAB49081	100 µg
ADAMTS10	Human	496708	MAB5270	100 µg
Aminopeptidase LRAP/ERAP2	Human	3F5	MAB3830	100 µg
Aminopeptidase N/ANPEP	Human	498001	MAB3815	100 µg
Angiopoietin-3	Mouse	113538	MAB1361	500 µg
Angiopoietin-like 3	Mouse	128644	MAB1362	100 µg
ATG4B	Human	515803	MAB5279	100 µg
B3GNT2	Human	485327	MAB3960	100 µg
Carbonic Anhydrase VA/VB	Human	487908	MAB5388	100 µg
Carbonic Anhydrase VB	Human	491725	MAB3176	100 µg
Carbonic Anhydrase VB	Human	487908	MAB5388	100 µg
Carnosine Dipeptidase 1	Human	352213	MAB24891	100 µg
CD39/ENTPD1	Human	498403	MAB4397	100 µg
CD39/ENTPD1	Human	498409	MAB43971	100 µg
CD44	Canine	69-S5	MAB5449	100 µg
CD97	Human	380905	MAB25291	500 µg
CD200	Human	325531	MAB27243	500 µg
Claspin	Human	485508	MAB3310	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
CREB	Mouse/Rat	485422	MAB5435	100 µg
ECE-1	Human	303913	MAB17841	100 µg
EDAR	Mouse	132106	MAB7451	500 µg
pro-EGF	Mouse	463004	MAB5256	100 µg
EphB6	Human/Mouse	465323	MAB3384	100 µg
FKBP52	Human	425123	MAB4095	100 µg
FoxJ1	Human	407003	MAB3619	100 µg
Galectin-3	Human	194805	MAB11541	500 µg
mGluR8	Mouse	476410	MAB5277	100 µg
GPR22	Human	455108	MAB4500	100 µg
IL-17 RC	Human	309801	MAB2269	100 µg
IL-22 R	Mouse	496504	MAB4294	100 µg
IL-23	Mouse	320234	MAB1887	500 µg
IL-24	Human	283161	MAB19652	500 µg
IL-27	Human	307426	MAB25261	100 µg
ILKAP/PP2Cδ	Human/Mouse/Rat	499526	MAB4554	100 µg
Integrin α2/CD49b	Human	430903	MAB12332	100 µg
LAMP	Human	110722	MAB8731	500 µg
LDL R	Human	472413	MAB2148	100 µg
M-CSF	Rat	427406	MAB5364	100 µg
M-CSF R	Mouse	460615	MAB3818	100 µg
MRP1	Human	464510	MAB1929	100 µg
Myosin Heavy Chain	Human	MF20	MAB4470	100 µg
Neuromedin B R	Human	466505	MAB4728	100 µg
PEAR1	Human	492621	MAB4527	100 µg
PEDF R	Human	494702	MAB5387	100 µg
Peroxiredoxin 2	Human/Mouse/Rat	477719	MAB3489	100 µg
PKA C (pan)	Human/Mouse/Rat	485013	MAB4175	100 µg
PP1 Inhibitor-2	Human	488123	MAB4719	100 µg
PP4 Catalytic Subunit	Human/Mouse/Rat	501517	MAB5074	100 µg
RBP4	Human/Mouse	423614	MAB34762	100 µg
Ribosomal Protein S6	Human/Mouse/Rat	522731	MAB5436	100 µg
Rit1	Human	456201	MAB4697	100 µg
S100B	Human	472806	MAB1820	100 µg
Serpin A12	Human	484223	MAB4410	100 µg
STAT1	Human	246523	MAB1490	100 µg
SUMO3	Human	401513	MAB2959	100 µg
Thrombomodulin/CD141	Human	501727	MAB39471	100 µg
TPT1/TCPT	Human/Mouse/Rat	488411	MAB4648	100 µg
Tryptophan Hydroxylase 1	Human	508417	MAB5276	100 µg
Vang-like Protein 1/VANGL1	Human	497707	MAB5476	100 µg
VIP R2	Human	476031	MAB5416	100 µg
WIF-1	Human	133009	MAB1342	500 µg

Dual Color ELISpot Kits

Analyte	Species	Catalog #	Size
IFN-γ/IL-4 Dual Color	Mouse	ELD5217	1 Kit

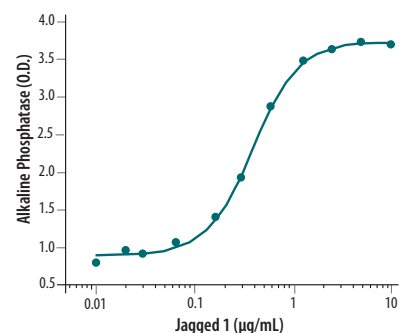
Signaling Cross-talk: Notch & BMP

The evolutionarily conserved Notch and BMP signaling pathways play critical roles in cell fate determination, proliferation, pattern formation, and morphogenesis in a broad range of tissues.^{1,2} Mechanisms of cross-talk and synergy between signaling pathways are being investigated as a means by which cells and tissues integrate signals.

In rodent neuroepithelial cells, BMP and Notch act synergistically to inhibit neural differentiation. BMP-2 enhances Notch-induced transcriptional activation, and Smad1, activated by BMP-2, forms a complex with NICD (the cytoplasmic portion of Notch that translocates to the nucleus to facilitate transcription) in the presence of coactivators.³

In contrast, during vascular development, BMP signaling promotes endothelial (EC) migration, while activated Notch signaling inhibits it. Interestingly, the expression of a Notch target gene is synergistically induced in ECs upon activation of Notch and BMP pathways, thereby providing a mechanism to ensure arrest of BMP-induced migration upon reception of an activated Notch signal.⁴

DLL-1 and Jagged 1 augment BMP-2-induced expression of several differentiation markers in osteoblasts and ectopic bone formation *in vivo*.⁵ This property is the basis for the bioassay measuring the activity of recombinant human Jagged 1 (Catalog # 1277-JG) now being offered by R&D Systems.



Jagged 1 Enhances Alkaline Phosphatase Production in the Presence of BMP-2. Increasing concentrations of immobilized recombinant human Jagged 1 (Catalog # 1277-JG) enhance the ability of recombinant human BMP-2 (150 ng/mL) to induce alkaline phosphatase production in the mouse mesenchymal cell line C3H10T1/2.

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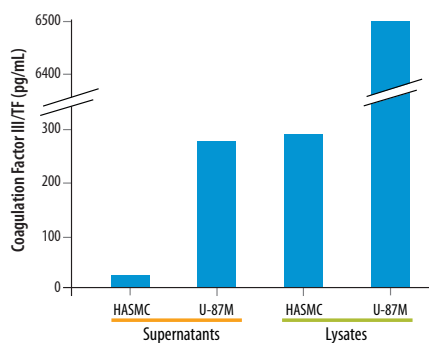


Blood Coagulation Factors

Blood clotting is a critical process required to initiate hemostasis following blood vessel damage. It is triggered through two overlapping pathways, the extrinsic and intrinsic pathways, which involve the sequential activation of coagulation factors by a series of proteolytic reactions.¹ The extrinsic pathway is initiated by contact between Coagulation Factor III/Tissue Factor, expressed in subendothelial cells, and Coagulation Factor VII present in the blood. The intrinsic pathway is initiated by Coagulation Factor XII, plasma Kallikrein, and Kininogen binding to a damaged subendothelial surface. Both coagulation pathways, although initiated by distinct factors, promote the activation of Thrombin and Fibrin clot formation.

Blood coagulation is subject to both positive and negative feedback regulation.^{2,3} Positive feedback allows the activation of specific factors to enhance clotting activity, while negative feedback prevents excessive clotting. One important mechanism of negative feedback involves the activation of Protein C by Thrombin binding to Thrombomodulin. Activated Protein C, along with Protein S, degrades Coagulation Factors Va and VIIIa to inhibit further activation of Thrombin and Coagulation Factor X, respectively.³

R&D Systems now offers a Coagulation Factor III/Tissue Factor Quantikine® ELISA (Catalog # DCF300), and several new unconjugated (Catalog # MAB39471) or fluorochrome-conjugated anti-human Thrombomodulin/CD141 monoclonal antibodies (Catalog # FAB3947A, FAB3947F, FAB3947P). Please visit our website at www.RndSystems.com/go/Coagulation for a complete listing of coagulation-related research products.



Assessment of the Levels of Coagulation Factor III in Cell Culture Supernatants and Cell Lysates. Cell culture supernatants or cell lysates from human U-87M glioma cells or human aortic smooth muscle cells (HASMC) were assayed using the human Coagulation Factor III/Tissue Factor Quantikine® ELISA Kit (Catalog # DCF300).

References

1. Monroe, D. & M. Hoffman (2006) *Arterioscler. Thromb. Vasc. Biol.* **26**:41.
2. Jesty, J. & E. Beltrami (2005) *Arterioscler. Thromb. Vasc. Biol.* **25**:2463.
3. Dahlback, B. & B. Villoutreix (2005) *FEBS Lett.* **579**:3310.

Labeled Antibodies

Biotinylated Antibodies

Antibody	Species	Type	Catalog #	Size
5T4	Mouse	Sheep IgG	BAF5049	50 µg
ADAM19	Human	Sheep IgG	BAF5050	50 µg
ADAM23	Human	Sheep IgG	BAF4974	50 µg
Aurora A	Human	Goat IgG	BAF3295	50 µg
Carboxylesterase 1/CES1	Human	Goat IgG	BAF4920	50 µg
Caspr2	Human	Sheep IgG	BAF5145	50 µg
CD157	Human	Sheep IgG	BAF4736	50 µg
CD200	Human	Mouse IgG ₁	BAM27242	250 µg
CDNF	Human	Goat IgG	BAF5097	50 µg
CDNF	Mouse	Goat IgG	BAF5187	50 µg
Chitinase 3-like 2	Human	Sheep IgG	BAF5116	50 µg
Chitotriosidase/CHIT1	Mouse	Sheep IgG	BAF5325	50 µg
CLEC10A/CD301	Human	Goat IgG	BAF4888	50 µg
CLEC3B/Tetranectin	Human	Sheep IgG	BAF5170	50 µg
Clusterin	Human	Goat IgG	BAF2937	50 µg
CRACC/SLAMF7	Mouse	Sheep IgG	BAF4628	50 µg
β-Defensin 2	Human	Goat IgG	BAF2758	50 µg
Follistatin-like 4	Human	Sheep IgG	BAF4890	50 µg
FoxM1	Human	Sheep IgG	BAF3975	50 µg
Goosecoid	Human	Goat IgG	BAF4086	50 µg
IFITM3/Fragilis	Mouse	Goat IgG	BAF3377	50 µg
IL-28A	Mouse	Sheep IgG	BAF4635	50 µg
LAG-3	Human	Mouse IgG _{2b}	BAM23191	250 µg
MDGA1	Human	Sheep IgG	BAF5055	50 µg
Mepripin α Subunit	Human	Goat IgG	BAF3220	50 µg
Neuraminidase (Influenza A H1N1)	Viral	Sheep IgG	BAF4858	50 µg
Nicastrin	Human	Sheep IgG	BAF5378	50 µg
Noelin-1	Mouse	Sheep IgG	BAF4636	50 µg
Prostasin/Prss8	Human	Sheep IgG	BAF4599	50 µg
RAGE	Canine	Sheep IgG	BAF4750	50 µg
RBP4	Mouse	Sheep IgG	BAF3476	50 µg
Serpin A3/α1-Antichymotrypsin	Human	Goat IgG	BAF1295	50 µg
Serpin E1/PAI-1	Mouse	Goat IgG	BAF3828	50 µg
SMOC-2	Human/Mouse	Sheep IgG	BAF5140	50 µg
TFF3	Human	Sheep IgG	BAF4407	50 µg
THSD1	Human	Sheep IgG	BAF5178	50 µg
TNF-α/TNFSF1A	Porcine	Mouse IgG ₁	BAM6903	250 µg
Uromodulin	Human	Sheep IgG	BAF5144	50 µg
Vimentin	Human	Goat IgG	BAF2105	50 µg
VSIG2	Human	Sheep IgG	BAF5177	50 µg
VSIG4	Human	Goat IgG	BAF4646	50 µg
WIF-1	Human	Mouse IgG ₁	BAM1341	250 µg

Labeled Antibodies

Fluorochrome-labeled Antibodies

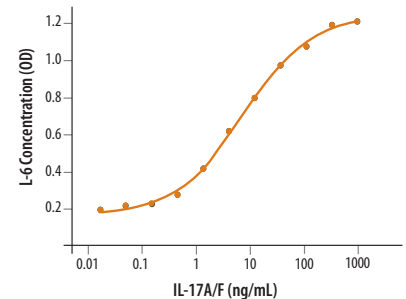
Antibody	Species	Label	Catalog #	Size
5'-Nucleotidase/CD73	Mouse	Allophycocyanin	FAB4488A	100 Tests
5'-Nucleotidase/CD73	Mouse	Fluorescein	FAB4488F	100 Tests
5'-Nucleotidase/CD73	Mouse	Phycoerythrin	FAB4488P	100 Tests
ALCAM/CD166	Mouse	Fluorescein	FAB1172F	100 Tests
ALCAM/CD166	Mouse	Phycoerythrin	FAB1172P	100 Tests
Alkaline Phosphatase	Human	PerCP	FAB1448C	100 Tests
B7-H3	Human	Allophycocyanin	FAB1027A	100 Tests
C1q R1/CD93	Mouse	Allophycocyanin	FAB1696A	100 Tests
C1q R1/CD93	Mouse	Phycoerythrin	FAB1696P	100 Tests
Cadherin-6/KCAD	Human	Allophycocyanin	FAB2715A	100 Tests
Cadherin-6/KCAD	Human	Phycoerythrin	FAB2715P	100 Tests
Cadherin-11	Human	Phycoerythrin	FAB1790P	100 Tests
Calcitonin R	Human	Allophycocyanin	FAB4614A	100 Tests
Calcitonin R	Human	Fluorescein	FAB4614F	100 Tests
Calcitonin R	Human	Phycoerythrin	FAB4614P	100 Tests
CCR3	Human	PerCP	FAB155C	100 Tests
CD4	Human	PerCP	FAB3791C	100 Tests
CD9	Mouse	Allophycocyanin	FAB5218A	100 Tests
CD9	Mouse	Fluorescein	FAB5218F	100 Tests
CD9	Mouse	Phycoerythrin	FAB5218P	100 Tests
CD39/ENTPD1	Human	Allophycocyanin	FAB4397A	100 Tests
CD39/ENTPD1	Human	Fluorescein	FAB4397F	100 Tests
CD39/ENTPD1	Human	Phycoerythrin	FAB4397P	100 Tests
CD151	Mouse	Allophycocyanin	FAB4609A	100 Tests
CD151	Mouse	Phycoerythrin	FAB4609P	100 Tests
CEACAM-5/CD66e	Human	Allophycocyanin	FAB4128A	100 Tests
CEACAM-5/CD66e	Human	Fluorescein	FAB4128F	100 Tests
CEACAM-5/CD66e	Human	Phycoerythrin	FAB4128P	100 Tests
CEACAM-6/CD66c	Human	Allophycocyanin	FAB3934A	100 Tests
CEACAM-6/CD66c	Human	Fluorescein	FAB3934F	100 Tests
Claudin-3	Human	Fluorescein	FAB4620F	100 Tests
CRACC/SLAMF7	Mouse	Allophycocyanin	FAB4628A	100 Tests
CRACC/SLAMF7	Mouse	Fluorescein	FAB4628F	100 Tests
CXCR3	Human	PerCP	FAB160C	100 Tests
Endoglin/CD105	Human	PerCP	FAB10971C	100 Tests
Phospho-ERK1 (T202/Y204)/ERK2 (T185/Y187)	Human/Mouse/Rat	Fluorescein	IC1018F	100 Tests
FCAR/CD89	Human	Allophycocyanin	FAB3939A	100 Tests
FCAR/CD89	Human	Fluorescein	FAB3939F	100 Tests
FCAR/CD89	Human	Phycoerythrin	FAB3939P	100 Tests
FCRL2/FcRH2	Human	Allophycocyanin	FAB2048A	100 Tests
FCRL2/FcRH2	Human	Phycoerythrin	FAB2048P	100 Tests
FCRL5/FcRH5	Human	Allophycocyanin	FAB20871A	100 Tests
FCRL5/FcRH5	Human	Fluorescein	FAB20871F	100 Tests
FCRL5/FcRH5	Human	Phycoerythrin	FAB20871P	100 Tests

continued on page 8.

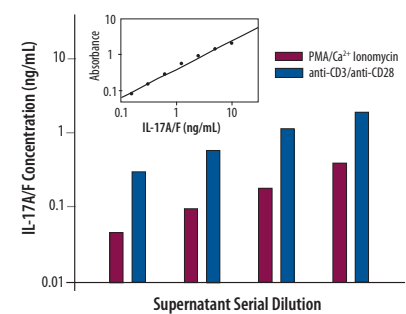
IL-17A/F Heterodimer: Recombinant Protein & DuoSet® ELISA

The IL-17 family consists of six members in both human and mouse designated IL-17A to IL-17F. Th17 cells are a distinct subset of T helper cells that were named for their ability to produce IL-17A.^{1,2} These cells also produce other cytokines including IL-17F. Th17 cells play a protective role during infection by extracellular gram-negative bacteria and fungi, and may also be involved in some autoimmune conditions. IL-17A and IL-17F exist as homodimers and also as IL-17A/IL-17F heterodimers that signal through a heterodimeric receptor complex composed of IL-17 RA and IL-17 RC subunits.^{3,4}

Now available are a human recombinant IL-17A/F heterodimer (Catalog # 5194-IL) IL-17A/F DuoSet ELISA Development Kit (Catalog # DY5194). For a complete listing of Th17 products, please visit our website at www.RnDSystems.com/go/Th17.



Recombinant IL-17A/F Stimulates IL-6 Production. Treatment of NIH-3T3 mouse fibroblasts with recombinant human IL-17A/F (Catalog # 5194-IL) induces dose-dependent IL-6 release into the supernatant as measured using the mouse IL-6 Quantikine ELISA Kit (Catalog # M6000B).



IL-17A/F production by activated T cells measured by ELISA. Human IL-17A/F was measured using the IL-17A/F Heterodimer DuoSet ELISA Development Kit (Catalog # DY5194). A two-fold dilution series of supernatant from human CD4⁺ T cells stimulated with PMA/Ca²⁺/ionomycin (maroon bars) or with anti-CD3/anti-CD28 beads (blue bars; beginning with 1:8 dilution). The standard curve generated using the recombinant IL-17A/F heterodimer supplied with the kit is shown in the inset.

References

- McGeachy, M.J. & D.J. Cua (2008) *Immunity* **28**:445.
- Dong, C. (2008) *Nature Rev. Immunol.* **8**:337.
- Liang, S.C. *et al.* (2007) *J. Immunol.* **179**:7791.
- Wright, J.F. *et al.* (2008) *J. Immunol.* **181**:2799.



Autophagy

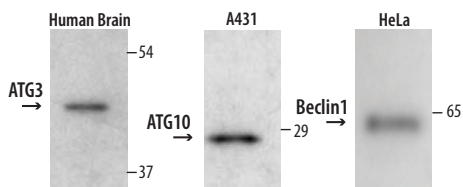
Autophagy is a degradative process characterized by the formation of a single or double membrane-bound vesicle called an autophagosome.¹ The autophagosome fuses with a lysosome and degrades cellular proteins and organelles, such as mitochondria or endoplasmic reticulum. Any usable materials are then recycled back to the cell. Autophagy is a normal process involved in cellular homeostasis, but it can also be triggered by other factors including nutritional deficiencies and cell stress.^{1,2} Recent literature has focused on autophagy as an alternative mechanism for programmed cell death distinct from apoptosis.^{2,4}

R&D Systems is now offering several new antibodies directed against proteins involved in the induction of autophagy or in autophagosome formation, including anti-ATG3, -ATG4B, -ATG10, and -Beclin1 (also known as ATG6).

New Autophagy-related Antibodies

Antibody	Species	Immunogen	Catalog #
ATG3	H M R	rhATG3 (aa 1-287)	AF5450
ATG4B	H	rhATG4B (aa 2-393)	MAB5279
ATG10	H	rhATG10 (aa 1-190)	AF5464
Beclin1	H M	rhBeclin1 (aa 12-239)	AF5295

*rh: recombinant human proteins



Detection of ATG3, ATG10, and Beclin1 by Western blot.

Human brain tissue lysates were immunoblotted using anti-human/mouse/rat ATG3 polyclonal antibody (Catalog # AF5450). A431 human epithelial cell carcinoma or HeLa cervical cancer cell lysates were immunoblotted using anti-human ATG10 (Catalog # AF5464) or anti-human/mouse Beclin1 (Catalog # AF5295) polyclonal antibodies, respectively.

References

- Lerena, C. *et al.* (2008) *Curr. Mol. Med* **8**:92.
- Maiuri, M. *et al.* (2007) *Nat. Rev. Mol. Biol.* **8**:741.
- Galluzzi, L. *et al.* (2008) *Curr. Mol. Med* **8**:78.
- Tsujimoto, Y. & S. Shimizu (2005) *Cell Death Differ.* **12**:1528.

Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Label	Catalog #	Size
<i>continued from page 7.</i>				
Frizzled-1	Human/Mouse	Allophycocyanin	FAB11201A	100 Tests
Frizzled-1	Human/Mouse	Fluorescein	FAB11201F	100 Tests
Frizzled-3	Human/Mouse	Allophycocyanin	FAB1001A	100 Tests
Frizzled-3	Human/Mouse	Phycoerythrin	FAB1001P	100 Tests
Frizzled-4	Human/Mouse	Allophycocyanin	FAB194A	100 Tests
Frizzled-4	Human/Mouse	Phycoerythrin	FAB194P	100 Tests
Frizzled-7	Human/Mouse	Allophycocyanin	FAB1981A	100 Tests
Frizzled-7	Human/Mouse	Phycoerythrin	FAB1981P	100 Tests
IL-7 R α /CD127	Mouse	Phycoerythrin	FAB747P	100 Tests
IL-10	Human	Fluorescein	IC2172F	100 Tests
IL-10	Human	Phycoerythrin	IC2172P	100 Tests
IL-15 R α	Human	Phycoerythrin	FAB1471P	100 Tests
IL-27	Human	Allophycocyanin	IC25261A	100 Tests
IL-27	Human	Fluorescein	IC25261F	100 Tests
IL-27	Human	Phycoerythrin	IC25261P	100 Tests
IgG	Goat	Allophycocyanin	IC108A	200 Tests
IgG	Sheep	Allophycocyanin	IC016A	200 Tests
IgG	Sheep	Fluorescein	IC016F	200 Tests
IgG	Rat	PerCP	IC013C	200 Tests
Insulin R/CD220	Human	Allophycocyanin	FAB1544A	100 Tests
Integrin α 2b/CD41	Mouse	Fluorescein	FAB41181F	100 Tests
Integrin α 2b/CD41	Mouse	Phycoerythrin	FAB41181P	100 Tests
Integrin β 6	Human	Allophycocyanin	FAB4155A	100 Tests
Integrin β 6	Human	Phycoerythrin	FAB4155P	100 Tests
LAG-3	Human	Phycoerythrin	FAB2319P	100 Tests
LMIR1/CD300A	Mouse	Allophycocyanin	FAB1186A	100 Tests
LMIR1/CD300A	Mouse	Fluorescein	FAB1186F	100 Tests
LMIR1/CD300A	Mouse	Phycoerythrin	FAB1186P	100 Tests
Nanog	Human	NorthernLights-557	NL1997G	500 μ L
Nestin	Human	NorthernLights-637	NL1259R	500 μ L
Nestin	Human/Mouse	NorthernLights-493	NL1259V	500 μ L
Neuropilin-1	Human	Allophycocyanin	FAB3870A	100 Tests
Neuropilin-1	Human	Fluorescein	FAB3870F	100 Tests
Neuropilin-1	Human	Phycoerythrin	FAB3870P	100 Tests
NKG2A	Human	PerCP	FAB1059C	100 Tests
NKp44	Human	Allophycocyanin	FAB22491A	100 Tests
Oct-3/4	Human/Mouse	NorthernLights-493	NL1759G	500 μ L
Oct-3/4	Human	PerCP	IC1759C	100 Tests
OX40/TNFRSF4	Human	Allophycocyanin	FAB3388A	100 Tests
Podocalyxin	Mouse	Allophycocyanin	FAB1556A	100 Tests
Podoplanin	Human	Allophycocyanin	FAB3670A	100 Tests
SOX2	Human/Mouse	NorthernLights-557	NL2018G	500 μ L
SOX2	Human/Mouse	NorthernLights-637	NL2018R	500 μ L
SOX2	Multi-species	NorthernLights-557	NL2018V	500 μ L
SOX2	Human/Mouse	PerCP	IC2018C	100 Tests
<i>continued on page 9.</i>				

Labeled Antibodies

Fluorochrome-labeled Antibodies

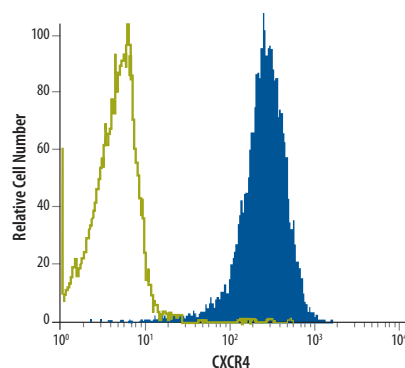
Antibody	Species	Label	Catalog #	Size
<i>continued from page 8.</i>				
Syndecan-1/CD138	Mouse	Allophycocyanin	FAB2966A	100 Tests
Syndecan-1/CD138	Mouse	Fluorescein	FAB2966F	100 Tests
Syndecan-1/CD138	Mouse	Phycoerythrin	FAB2966P	100 Tests
LAP (TGF- β 1)	Human	Allophycocyanin	FAB2463A	100 Tests
LAP (TGF- β 1)	Human	PerCP	FAB2463C	100 Tests
Thrombomodulin/CD141	Human	Allophycocyanin	FAB3947A	100 Tests
Thrombomodulin/CD141	Human	Fluorescein	FAB3947F	100 Tests
Thrombomodulin/CD141	Human	Phycoerythrin	FAB3947P	100 Tests
Thrombopoietin R	Human	Allophycocyanin	FAB1016A	100 Tests
β -III Tubulin	Multi-species	NorthernLights-637	NL1195R	500 μ L
β -III Tubulin	Human	NorthernLights-493	NL1195V	500 μ L
Twist-1	Human	Fluorescein	IC5318F	100 Tests

New Fluorochrome-conjugated Antibodies

R&D Systems is now conjugating PerCP and NorthernLights fluorochromes to our wide selection of high quality antibodies.

PerCP Conjugates

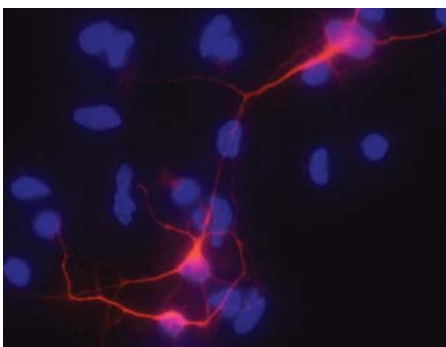
Peridinin Chlorophyll Protein Complex (PerCP)-conjugated antibodies are convenient tools for use in flow cytometry experiments. PerCP is excited by the 488 nm wavelength argon laser, and with a relatively large Stokes shift, emits at a maximum wavelength of 675 nm. Because of these spectral characteristics, there is minimal overlap with other commonly used fluorochromes such as phycoerythrin (PE) or fluorescein. This makes PerCP-labeled antibodies especially useful for multi-color analysis. For an updated listing of PerCP-conjugated antibodies, please visit our website at www.RnDSystems.com/go/PerCP



CXCR4 Expression in Jurkat Cells Using Flow Cytometry. Jurkat human leukemic T lymphocytes were labeled using PerCP-conjugated anti-human CXCR4 (Catalog # FAB170C; filled histogram) or with an isotype control antibody (Catalog # IC003C; open histogram).

NorthernLights™ Conjugates

R&D Systems is now directly conjugating our NorthernLights fluorochromes to primary antibodies. Each antibody is conjugated to one of three fluorochromes that are suitable for multi-color immunofluorescence experiments: NorthernLights-493 (green), NorthernLights-557 (red), or NorthernLights-637 (far red). NorthernLights conjugates are bright, deliver a high signal-to-noise ratio, and are resistant to photobleaching, making them ideal for fluorescence microscopy. For additional information and updated product listings, please visit our website at www.RnDSystems.com/go/NLConjugates.



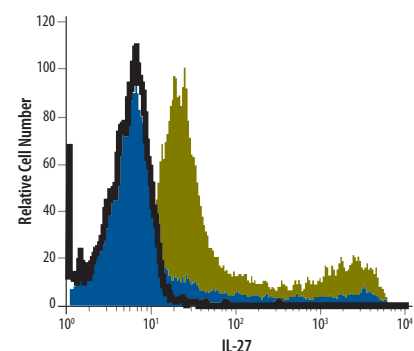
Detection of Neuron-specific β -III Tubulin in Differentiating Rat Cortical Stem Cells. Neuron-specific β -III Tubulin was detected in differentiating rat cortical stem cells using NorthernLights-557-conjugated anti-Neuron-specific β -III Tubulin monoclonal antibody (Catalog # NL1195R; red). The nuclei were counterstained with DAPI (blue).

Interleukin-27

IL-27 is emerging as an important factor in the regulation of T cell subsets.^{1,2} It is a heterodimer of the IL-12 family consisting of an EB13 subunit (related to IL-12 p40) and a p28 subunit (related to IL-6 and IL-12 p35).³ IL-27 is produced primarily by antigen-presenting cells, including dendritic cells and macrophages, and also by neutrophils.¹⁻³ It signals through a receptor complex composed of the IL-27 receptor α chain (IL-27 RA, also known as TCCR and WSX-1) and a gp130 subunit.^{3,4} The IL-27 receptor complex is expressed at highest levels on T cell and NK cells, but it is also found on several other cell types.^{1,2}

Increased expression of IL-27 is associated with sites of inflammation during infection by invading pathogens.^{1,2} Some human and animal autoimmune disease models also display elevated IL-27 expression. Experiments with IL-27RA^{-/-} mice reveal that IL-27 moderates inflammatory responses in Th1, Th2, or Th17-polarized models. The anti-inflammatory activity of IL-27 is attributed to its ability to inhibit cytokine production by Th subsets; however, IL-27 is also a potent inducer of IL-10, an effective inhibitor of accessory cell function.⁵ IL-27 is an important regulator that must be expressed in proper balance, along with other major regulators of Th subsets such as IL-12 and IL-23, to maintain immune homeostasis.²

R&D Systems is now offering a new IL-27 monoclonal antibody (page 5) and three new fluorescent conjugates suitable for flow cytometry (page 8).



Active Peripheral Blood Mononuclear Cells (PBMCs) Express IL-27 as Shown Using Flow Cytometry. Human PBMCs, resting (blue histogram), or activated with PHA and IL-2 (green histogram), were stained with APC-conjugated anti-IL-27 (Catalog # IC25261A) or isotype control (Catalog # IC003A, black line).

References

1. Stumhofer, J.S. & C.A. Hunter (2008) *Immunol. Lett.* **117**:123.
2. Kastelein, R.A. *et al.* (2007) *Annu. Rev. Immunol.* **25**:221.
3. Pflanz, S. *et al.* (2002) *Immunity* **16**:779.
4. Pflanz, S. *et al.* (2004) *J. Immunol.* **172**:2225.
5. Batten, M. *et al.* (2008) *J. Immunol.* **180**:2752.

Stem Cell Products

Mouse Methylcellulose-based media

The colony-forming cell (CFC) assay is used to assess the differentiation of hematopoietic progenitors in a semi-solid medium (methylcellulose) in response to cytokine stimulation. For detailed protocols, please visit our website at www.RnDSystems.com/go/MethylcelluloseProtocol.

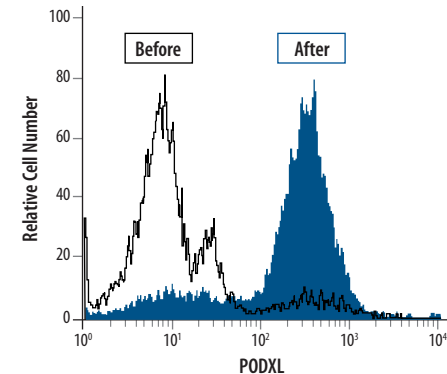
Media	Cat. #	Supplements For:
Base Media	HSC006	User supplied supplements for custom experiments
Complete Media	HSC007	BFU-E, CFU-GM, CFU-GEMM
Complete Media without Epo	HSC008	CFU-GM



CFU-GEMM Colony Using the Colony Forming Cell Assay. CFU-GEMM colony was derived from mouse bone marrow cells cultured in mouse Methylcellulose Complete Media (Catalog # HSC007).

Positive Cell Selection/Detection Kits

PlusCollect Kits contain antibodies for both the enrichment and immunophenotyping of stem/progenitor cells. R&D Systems is now offering kits for human Podocalyxin (PODXL) expressing stem cells (Catalog # PLS1658) and human Tie-2-expressing endothelial progenitors (Catalog # PLS313).



Enrichment and Detection of PODXL-expressing Stem Cells. PODXL positive cells were isolated and detected using the human PODXL PlusCollect Kit (Catalog # PLS1658) from a heterogeneous cell population that included peripheral blood mononuclear cells and the PODXL-expressing human embryonic stem cell line BGO1V

Mouse Primary Cortical Stem Cells

Mouse primary cortical stem cells (Catalog # NSC001) are multipotent neural progenitors isolated from the cortex of E14.5 CD-1 mice. Please visit our website for culture protocols at www.RnDSystems.com/go/MouseCorticalSCProtocol.

Cell-Based ELISA Base Kits for Custom Assay Development

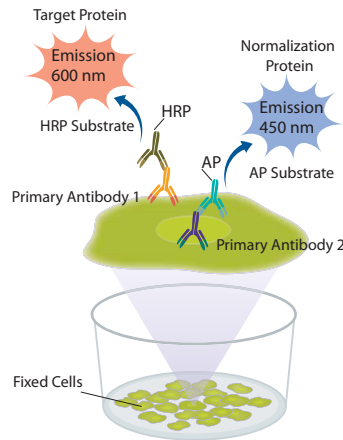
Simultaneously quantify two proteins in the same microplate well without lysate preparation.

R&D Systems now offers five Cell-Based ELISA Base Kits with different combinations of labeled secondary antibodies, allowing the investigator to conveniently choose their own primary antibodies for custom assay development. For details about the Base Kits, or for a listing of available complete kits that include primary antibodies, please visit our website at www.RnDSystems.com/go/CellBasedAssays.

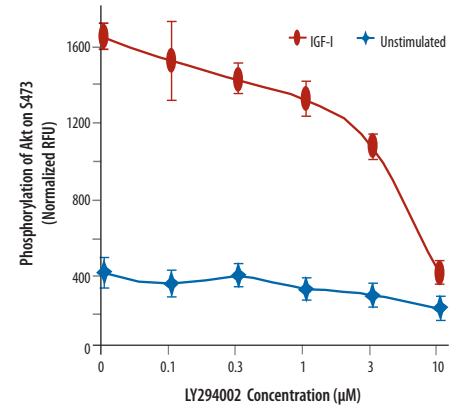
Cell-Based ELISA Base Kits

Analyte	Secondary Antibodies	Catalog #	Size
Cell-Based ELISA Base Kit 1	anti-Mouse-AP anti-Rabbit-HRP	KCB001	2 Plates
Cell-Based ELISA Base Kit 2	anti-Goat-AP anti-Mouse-HRP	KCB002	2 Plates
Cell-Based ELISA Base Kit 3	anti-Mouse-AP anti-Goat-HRP	KCB003	2 Plates
Cell-Based ELISA Base Kit 4	anti-Goat-AP anti-Rabbit-HRP	KCB004	2 Plates
Cell-Based ELISA Base Kit 5	anti-Rat-AP anti-Rabbit-HRP	KCB005	2 Plates

AP : Alkaline Phosphatase HRP : Horseradish Peroxidase



Cell-Based ELISA Assay Principle. Fixed cells are incubated with two primary antibodies derived from different species. The Base Kits include buffers, two species-specific secondary antibodies conjugated to HRP or AP, and two enzyme-specific fluorogenic substrates used for detection. Dual detection allows for normalized ratiometric analysis, compensating for well-to-well variations such as differences in cell number. Assays are read using a typical fluorescence plate reader, are faster than Western blots, and are suitable for high-throughput applications.



Effects of PI 3-Kinase Inhibitor LY294002 on IGF-I-induced Akt Phosphorylation. MCF-7 human breast cancer cells in a 96-well plate were pre-treated with the indicated concentrations of LY294002 and then either unstimulated or treated with 25 ng/mL of recombinant human IGF-I (Catalog # 291-G1). After fixation, cells were incubated simultaneously with rabbit anti-phospho-Akt (S473) and mouse anti-total Akt antibodies. Akt phosphorylation was then determined using Cell-Based ELISA Base Kit 1 (Catalog # KCB001).

Cell Culture & Stem Cell Reagents

Product	Species	Catalog #	Size
Mouse Methylcellulose Base Media	Mouse	HSC006	90 mL
Mouse Methylcellulose Complete Media	Mouse	HSC007	100 mL
Mouse Methylcellulose Complete Media Without Epo	Mouse	HSC008	100 mL
Mouse Cortical Stem Cells (2 x 10 ⁶ cells/vial)	Mouse	NSC002	2 Vials

ELISA & Activity Assay Development Kits

DuoSet® ELISA Development Systems

Analyte	Species	Catalog #	*Reagents for
2B4/CD244/SLAMF4	Human	DY1039	15 Plates
Angiotensin-like 4	Human	DY3485	15 Plates
CD97	Human	DY2529	15 Plates
CD200	Human	DY2724	15 Plates
Complement Component C5a	Human	DY2037	15 Plates
Complement Component C5a	Mouse	DY2150	15 Plates
DAN	Mouse	DY755	15 Plates
ECF-L/CHI3L3	Mouse	DY2446	15 Plates
Fetuin A	Human	DY1184	15 Plates
sFRP-3	Human	DY192	15 Plates
Galectin-3	Human	DY1154	15 Plates
GM-CSF	Canine	DY1546	15 Plates
H60	Mouse	DY1155	15 Plates
IFN-γ	Equine	DY1586	15 Plates
IL-17A/F Heterodimer	Human	DY5194	15 Plates
IL-23	Mouse	DY1887	15 Plates
LAG-3	Human	DY2319	15 Plates
NOV/CCN3	Mouse	DY1976	15 Plates
OX40 Ligand/TNFSF4	Mouse	DY1236	15 Plates
Prostasin/Prss8	Mouse	DY2968	15 Plates
TREML1/TLT-1	Mouse	DY2424	15 Plates
Tryptase ε/BSSP-4	Mouse	DY2059	15 Plates
WIF-1	Human	DY134	15 Plates

*Also available in 45 plate Economy Packs.

DuoSet IC (Intracellular) ELISAs & Activity Assays

Analyte	Species	Catalog #	*Reagents for
Phospho-WNK1 (T60)	Human/Mouse/Rat	DYC4720-2	2 Plates
Total EphA5	Human/Mouse	DYC3036-2	2 Plates
Phospho-EphA5	Human/Mouse	DYC5037-2	2 Plates
Total Erythropoietin R	Human	DYC963-2	2 Plates
Phospho-FGF R1	Human	DYC5079-2	2 Plates
Total FGF R4	Human	DYC685-2	2 Plates

*Also available in 5 plate packs and 15 plate Economy Packs.

Antibody Controls

Product	Species	Catalog #	Size
Rat IgG _{2b} PerCP	Rat	IC013C	200 Tests
Goat IgG Allophycocyanin	Goat	IC108A	200 Tests
Sheep IgG Allophycocyanin	Sheep	IC016A	200 Tests
Sheep IgG Fluorescein	Sheep	IC016F	200 Tests

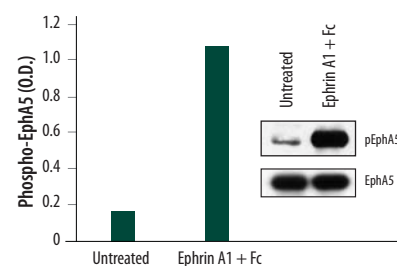
Secondary Antibodies

Product	Species	Catalog #	Size
Goat anti-rat IgG PerCP	Rat	F0115	100 Tests

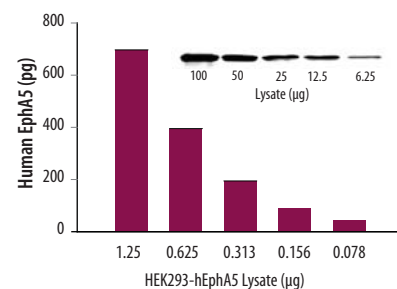
Total & Phospho-EphA5 DuoSet IC ELISA Development Kits

Eph receptors form the largest subfamily of receptor tyrosine kinases (RTKs) with 16 members in vertebrates. The ten EphA receptors preferentially bind Ephrin A ligands, while the six EphB receptors favor ligands from the Ephrin B class.¹ Eph/Ephrin complexes form cell communications systems with bidirectional signaling: both receptor and ligand are competent to initiate a signaling cascade in their corresponding cells upon binding.² EphA5 is widely expressed in neurons of the human CNS, with highest levels in the hippocampus, striatum, hypothalamus, and amygdala.³ During neural development, EphA5 functions in axon guidance. The receptor and ligand act as repellants that prevent axons from entering inappropriate regions, restricting cells to specific pathways during their migration.⁴

R&D Systems now offers DuoSet IC ELISA development kits to measure either total or phosphorylated EphA5 in cell lysates. Please see the table at left for details.



Ligand-induced EphA5 Phosphorylation. The Phospho-EphA5 DuoSet IC ELISA Development Kit (Catalog # DYC5037) was used to detect tyrosine phosphorylation in lysates from EphA5-transfected HEK293 human embryonic kidney cells either untreated, or treated with recombinant mouse EphrinA1/Fc (Catalog # 602-A1) and human IgG-Fc (for clustering). ELISA and IP-Western blot (inset) analyses were done using 1 µg and 100 µg of lysate, respectively.



EphA5 Sensitivity Measured with ELISA vs. Western Blot. Lysate from HEK293 human embryonic kidney cells transfected with human EphA5 (HEK293-hEphA5) was serially diluted and analyzed using the Total EphA5 DuoSet IC ELISA (Catalog # DYC3036) or by IP-Western blot (inset). Human EphA5 can be detected by ELISA using less lysate than is needed for a conventional IP-Western blot.

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R&D Systems, Inc.

614 McKinley Place N.E.

Minneapolis, MN 55413

Tel: (800) 343-7475

(612) 379-2956

Fax: (612) 656-4400

www.RnDSystems.com

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Active Carbohydrate-specific Sulfotransferases

Sulfation is an important post-translational modification that occurs on glycans, proteins, steroids, hormones, neurotransmitters, and xenobiotics. It can result in changes in their chemical, physical, and biological properties such as solubility, activity, and affinity.^{1,2} In humans, there are 48 sulfotransferases. More than half of them are Golgi resident enzymes involved in sulfation on carbohydrates.³ R&D Systems currently offers various recombinant carbohydrate specific sulfotransferases (CHST; Table 1). CHST2, 4, 5, 6, and 7 can sulfate the 6-O position of GlcNAc residues on N- and O-glycans.⁴ CHST1, 3, 7, and GalNAc4S-6ST can sulfate Gal/GalNAc residues on keratan sulfate and/or chondroitin

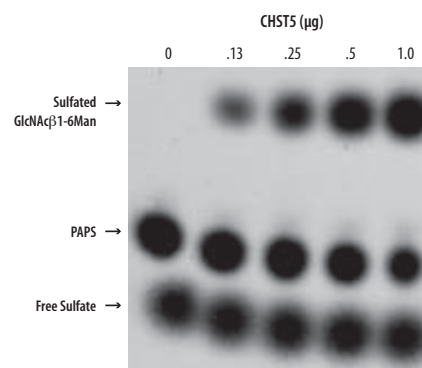
sulfate.^{5,6} Heparan sulfate 6-O sulfotransferase 1 (HS6ST1) and HS6ST3 can sulfate GlcNAc residues on heparan sulfate.⁷ Activities of these recombinant sulfotransferases have been tested on various oligosaccharides, polysaccharides, and proteoglycans.

References

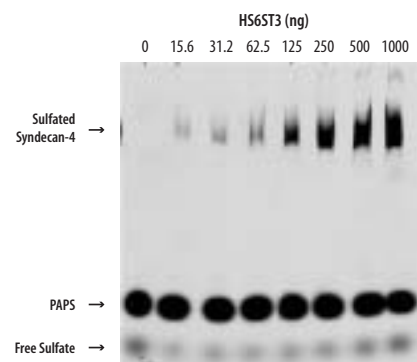
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Table 1. Active carbohydrate-specific sulfotransferases.

Enzyme	Alternative name	Species	Catalog #	Substrate Assayed	Specific Activity (pmol/min/μg)
CHST1	KSGal6ST	Human	5316-ST	Recombinant Human Aggrecan (Catalog # 1220-PG)	≥ 4.0
		Mouse	5355-ST		≥ 3.5
CHST2	GlcNAc6ST1, GST2	Human	5107-ST	GlcNAcβ1-6Man	≥ 7
CHST4	GlcNAc6ST2, LSST, GST3	Human	5357-ST	GlcNAcβ1-6Man	≥ 90
CHST5	GlcNAc6ST3, I-GlcNAc6ST	Mouse	5210-ST	GlcNAcβ1-6Man	≥ 30
CHST6	GlcNAc6ST-5, C-GlcNAc6ST	Human	5326-ST	GlcNAcβ1-6Man	≥ 50
CHST7	GlcNAc6ST4, GST5, C6ST2	Mouse	5108-ST	GlcNAcβ1-6Man	≥ 25
GalNAc4S-6ST	BRAG	Human	3365-ST	Chondroitin Sulfate	≥ 100
HS6ST1		Human	5057-ST	Heparan Sulfate	≥ 25
HS6ST3		Mouse	5406-ST	Recombinant Syndecan-4 (Catalog # 2918-SD)	≥ 40



CHST5 Transfers Sulfate to GlcNAcβ1-6Man. Each reaction contained the indicated amount of recombinant mouse CHST5 (Catalog # 5210-ST), the acceptor substrate GlcNAcβ1-6Man, and the sulfate donor PAPS spiked with ³⁵S PAPS. Following incubation, reaction products were separated using SDS-PAGE and the gel exposed to x-ray film.



HS6ST3 Transfers Sulfate to Syndecan-4. Each reaction contained the indicated amount of recombinant mouse HS6ST3 (Catalog # 5406-ST), recombinant human Syndecan-4 (Catalog # 2818-SD) as an acceptor substrate, and the sulfate donor PAPS spiked with ³⁵S PAPS. Following incubation, reaction products were separated using SDS-PAGE and the gel exposed to x-ray film.