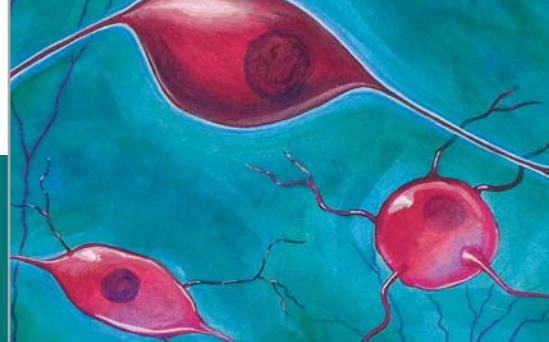


New Products June 2009



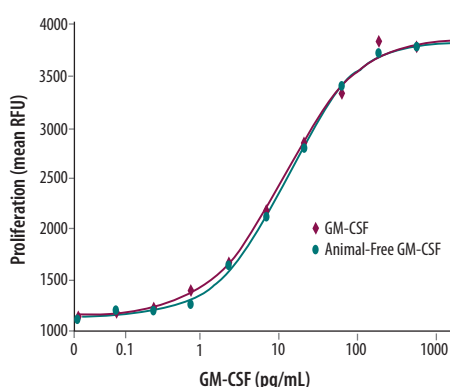
Animal-Free™ Recombinant Proteins

R&D Systems has produced high quality proteins for the research community for more than 20 years. To support developing research and bioproduction demands, we offer products manufactured in a laboratory exclusively dedicated to the production and purification of recombinant proteins under animal-free conditions. Animal-free proteins are particularly important for researchers concerned with experimental variables caused by trace animal components or mammalian pathogens. Our products, generated under animal-free conditions, share the same biological activities as those produced using our standard laboratory techniques.

Since 2002, we have been optimizing our established protein manufacturing processes to generate high quality recombinant proteins in the absence of animal components or by-products. Our animal-free products are manufactured in a controlled-access facility. It is used exclusively for the production, purification, and filling of animal-free proteins.

Our dedicated animal-free laboratories ensure that at no point in production are the products exposed to potential contamination by animal components or by-products. Production and purification procedures use equipment and media that are

confirmed animal-free. For more information, or to read R&D Systems complete animal-free statement, please visit our website at www.RnDSystems.com/go/AnimalFree.



Bioactivity of Animal-Free GM-CSF. TF-1 human erythroleukemic cells were treated with the indicated concentrations of recombinant human GM-CSF (Catalog # 215-GM; burgundy line) or animal-free recombinant human GM-CSF (Catalog # AFL215; green line) for three days. Cell number was determined in a fluorometric assay using the redox sensitive dye, Resazurin (Catalog # AR002). The data illustrates the high bioactivity of our animal-free products and demonstrates that it is comparable to the protein produced under typical conditions.

Animal-Free Proteins

Protein	Species	Source	Catalog #	Size
EGF	Human	<i>E. coli</i>	AFL236	1 mg
FGF basic	Bovine	<i>E. coli</i>	AFL2099	1 mg
FGF basic	Human	<i>E. coli</i>	AFL233	1 mg
GM-CSF	Human	<i>E. coli</i>	AFL215	1 mg
IGF-1	Human	<i>E. coli</i>	AFL291	1 mg
IL-1β/IL-1F2	Mouse	<i>E. coli</i>	AFL401	1 mg
IL-2	Human	<i>E. coli</i>	AFL202	1 mg
IL-6	Human	<i>E. coli</i>	AFL206	1 mg
PDGF-AA	Human	<i>E. coli</i>	AFL221	1 mg
TNF-α/TNFSF1A	Human	<i>E. coli</i>	AFL210	1 mg

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Multi-Color Flow Cytometry Kits	12

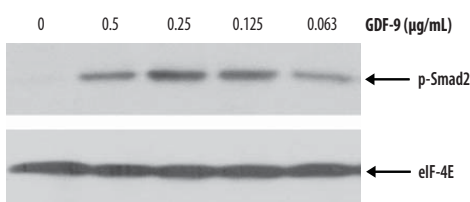


Growth Differentiation Factor-9

GDF-9 is an oocyte-derived TGF- β superfamily ligand that exerts multiple effects on surrounding ovarian granulosa cells (GC). GC, in turn, provide metabolic support for the developing oocyte. GDF-9 closely resembles BMP-15 in terms of structure as well as function.¹ N-terminal propeptides are removed from these proteins, and the resulting mature growth factors associate non-covalently into homodimers or heterodimers.² The propeptides may also be incorporated into non-covalent multimeric complexes with the mature peptides.³ Phosphorylation of mature GDF-9 and BMP-15 is required for their activity on GC.⁴

Both GDF-9 and BMP-15 are expressed by oocytes throughout folliculogenesis, and synergistically drive GC to promote oocyte survival and development.^{1,3,5} They stimulate GC proliferation and induce GC to release glycolysis products and cholesterol, which the oocyte does not produce for itself.^{3,5} GDF-9 and BMP-15 are also expressed by developing spermatocytes. GDF-9 disrupts Sertoli cell tight junctions, thereby facilitating spermatocyte movement across the blood-testis barrier into the seminiferous tubule lumen.⁶

The paracrine actions of GDF-9 are carried out by the type 1 receptor TGF- β RI/ALK5 and the type 2 receptor BMPR-II. BMP-15 likewise utilizes BMPR-II but uses BMPR-IB/ALK6 as its type 1 receptor.⁴ The common involvement of BMPR-II is responsible for the synergistic effect of GDF-9 and BMP-15 on GC proliferation.⁷



Recombinant GDF-9 Stimulates Smad2 Phosphorylation. Serum-starved P19 mouse embryonic carcinoma cells were incubated for 45 minutes with recombinant mouse GDF-9 (Catalog # 739-G9) at the indicated concentrations. The cell lysates were then immunoblotted for phosphorylated Smad2 (p-Smad2) and eIF-4E was used as a loading control.

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Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Acetylcholinesterase/ACHE	Mouse	NS0	5518-CE-010	10 μ g
β (1-4)-Galactosidase	<i>S. pneumoniae</i>	<i>E. coli</i>	5549-GH-100	100 μ g
BMP-9	Mouse	CHO	5566-BP-010	10 μ g
Butyrylcholinesterase/BCHE	Mouse	NS0	5527-CE-010	10 μ g
C4.4A/LYPD3	Human	NS0	5428-C4-050	50 μ g
C4.4A/LYPD3	Mouse	NS0	5567-C4-050	50 μ g
Carboxylesterase 3/CES3	Mouse	NS0	5428-CE-010	10 μ g
CD55/DAF	Mouse	NS0	5490-CD-050	50 μ g
Contactin-4	Mouse	CHO	5495-CN-050	50 μ g
Cyr61/CCN1, Fc Chimera	Human	CHO	4055-CR-050	50 μ g
Dkk-1	Human	Sf 21	5439-DK-010	10 μ g
FCRL2/FcRH2	Human	NS0	2048-FC-050	50 μ g
FGF-BP	Human	NS0	1593-FB-025	25 μ g
GDF-9	Mouse	CHO	739-G9-010	10 μ g
Glucosamine (N-acetyl)-6-Sulfatase/GNS	Human	CHO	2484-SUC-010	10 μ g
GPR115	Human	CHO	5437-GP-050	50 μ g
Hepsin	Human	NS0	4776-SE-010	10 μ g
HVEM/TNFRSF14, Fc Chimera	Mouse	CHO	2516-HV-100	100 μ g
IGSF4C	Human	NS0	4164-S4-050	50 μ g
IL-10	Guinea Pig	<i>E. coli</i>	5258-GL-010	10 μ g
IL-17A/F Heterodimer	Mouse	<i>E. coli</i>	5390-IL-025	25 μ g
IL-28 R α /IFN- λ R1, Fc Chimera	Mouse	NS0	5384-MR-050	50 μ g
Proinsulin	Human	<i>E. coli</i>	1336-PN-050	50 μ g
Integrin α 4/ β 7/LPAM-1	Human	CHO	5397-A3-050	50 μ g
Integrin α 6 (X1) β 4	Human	CHO	5497-A6-050	50 μ g
Integrin α 9/ β 1	Human	CHO	5438-A9-050	50 μ g
Kirrel2	Human	NS0	2564-K2-050	50 μ g
LRRN3/NLRR-3	Human	NS0	5398-LR-050	50 μ g
N-Acetylglucosaminyltransferase V/MGAT5	Human	NS0	5469-GT-020	20 μ g
Active p38 α	Human	Sf 9	5477-KS-010	10 μ g
Phosphoglycerate kinase-1/PGK-1	Human	Sf 21	5455-PK-010	10 μ g
Proprotein Convertase 9/PCSK9	Human	NS0	3888-SE-010	10 μ g
PSP	Human	NS0	5498-PS-050	50 μ g
Semaphorin 3B, Fc Chimera	Mouse	NS0	5440-S3-025	25 μ g
Slit2	Mouse	CHO	5444-SL-050	50 μ g
SMPD1	Human	CHO	5348-PD-010	10 μ g
TAF A2/FAM19A2	Human	<i>E. coli</i>	4179-TA-050	50 μ g
TAF A4/FAM19A4	Human	<i>E. coli</i>	5099-TA-050	50 μ g
TAF A5/FAM19A5	Human	<i>E. coli</i>	5148-TA-050	50 μ g
Tissue Transglutaminase2/TGM2	Mouse	Sf 21	5418-TG-010	10 μ g
Tyrosylprotein Sulfotransferase 1/TPST1	Human	NS0	5468-ST-020	20 μ g
Trypsin γ -1/TPSG1	Mouse	CHO	5517-SE-010	10 μ g
VEGF-111	Human	<i>E. coli</i>	5336-VE-010	10 μ g
Wnt-3a (High Purity)	Human	CHO	5036-WNP-010	10 μ g
Wnt-4	Mouse	CHO	475-WN-005	5 μ g

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
Ajuba	Human	Goat IgG	AF5594	100 µg
α-Parvin	Human	Sheep IgG	AF5556	100 µg
AMSH/STAMP	Human	Goat IgG	AF5650	100 µg
Angiocidin	Mouse	Goat IgG	AF5540	100 µg
BAK	Human/Mouse/Rat	Goat IgG	AF8161	100 µg
BAP31	Human	Goat IgG	AF5574	100 µg
BSRP-B	Human	Goat IgG	AF5598	100 µg
Calretinin	Human/Mouse/Rat	Goat IgG	AF5065	100 µg
Calsyntenin-1	Human	Sheep IgG	AF5346	100 µg
CD55/DAF	Mouse	Sheep IgG	AF5376	100 µg
CD-M6PR	Human	Goat IgG	AF5320	100 µg
CDNF	Mouse	Goat IgG	AF5187	100 µg
CEACAM-7	Human	Sheep IgG	AF4478	100 µg
CILP-1 N-terminal Peptide	Human	Goat IgG	AF5504	100 µg
Collectrin	Mouse	Sheep IgG	AF4965	100 µg
Contactin-3	Human/Mouse/Rat	Goat IgG	AF5539	100 µg
CRTAC1	Human	Sheep IgG	AF5234	100 µg
DLL1	Mouse/Rat	Sheep IgG	AF5026	100 µg
DYRK1A	Human/Rat	Sheep IgG	AF5407	100 µg
DYRK2	Human/Mouse/Rat	Sheep IgG	AF5408	100 µg
DYRK3	Human/Mouse/Rat	Goat IgG	AF5409	100 µg
Eps8	Human	Goat IgG	AF5529	100 µg
FOLR1	Human	Goat IgG	AF5646	100 µg
FOLR3	Human	Sheep IgG	AF5319	100 µg
FoxP2	Human/Mouse	Sheep IgG	AF5647	100 µg
GABA-A-Rβ3	Human	Sheep IgG	AF5590	100 µg
GADD45α	Human	Sheep IgG	AF5510	100 µg
Glyoxalase I	Human/Mouse/Rat	Goat IgG	AF4959	100 µg
GPER	Human	Goat IgG	AF5534	100 µg
HAX-1	Human	Goat IgG	AF5458	100 µg
HIC5/TGFB111	Human	Goat IgG	AF5626	100 µg
HMGB3	Human/Mouse	Goat IgG	AF5507	100 µg
IFITM1	Human	Goat IgG	AF4827	100 µg
IL-2 Rα	Rat	Sheep IgG	AF5156	100 µg
IL-10 Rβ	Mouse	Goat IgG	AF5368	100 µg
Integrin α6/CD49f	Human	Goat IgG	AF1350	100 µg
Ku70/XRCC6	Human	Goat IgG	AF5597	100 µg
Ku80/XRCC5	Human	Goat IgG	AF5619	100 µg
Kynureninase	Human	Goat IgG	AF4887	100 µg
LRRTM2	Human/Mouse	Sheep IgG	AF5589	100 µg
MESDC2	Human	Sheep IgG	AF5577	100 µg
MIS RII	Human	Sheep IgG	AF4749	100 µg
NAALADase-Like 1/NAALADL1	Human	Sheep IgG	AF5467	100 µg
NEDD9	Human	Goat IgG	AF5459	100 µg
Nep mucin/CD300LG	Mouse	Sheep IgG	AF5554	100 µg
Neuroigin 2/NLGN2	Human/Rat	Goat IgG	AF5645	100 µg
Neuroplastin 65	Human/Mouse	Goat IgG	AF5360	100 µg

continued on page 4.

Cyr61/CCN1

Cysteine-rich protein 61 (Cyr61, also known as CCN1) is a member of the CCN family, which is comprised of six structurally related extracellular glycoproteins.^{1,2} The CCN family was named after its three founding members, Cyr61, connective tissue growth factor (CTGF, also known as CCN2), and nephroblastoma overexpressed protein (NOV, also known as CCN3). The other members of CCN family are WISP-1 (CCN4), -2 (CCN5), and -3 (CCN6).^{2,3} CCN proteins are able to interact with multiple molecules and modulate the extracellular environment.³ Collectively, they regulate many cellular processes, including cell growth, adhesion, apoptosis, angiogenesis, placentation, implantation, embryogenesis, and endochondral ossification.^{2,3}

Cyr61 was the first identified member of CCN family. It is encoded by a growth factor-inducible immediate early gene.^{1,4} Mature human Cyr61 is a 40–45 kDa protein that shares 93% amino acid sequence identity with mouse and rat Cyr61. It is widely expressed, both during development, and in adult tissues. Cyr61 regulates cell adhesion, migration, proliferation, survival, and differentiation, and plays a key role in angiogenesis.^{1,2,5} It is upregulated in injured skin and bone where it induces the expression of many extracellular factors involved in wound repair.⁶ Canonical Wnt signaling regulates Cyr61 expression during osteogenic differentiation, implying that it may play an important role in Wnt-3a-induced osteoblast differentiation of mesenchymal stem cells.⁷

R&D Systems is now offering a new recombinant human Cyr61 (page 2). Other new CCN family products include NOV/CCN3 antibodies (pages 6 and 7), and a NOV/CCN3 DuoSet® ELISA Development Kit (page 10).

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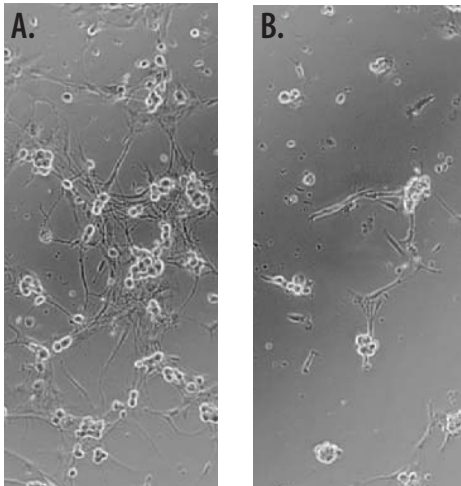
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Axon Guidance

Axons are guided to their appropriate targets by the integration of attractive and repulsive signals from the extracellular environment. These guidance cues include molecules belonging to the Semaphorin and Slit families.¹ Semaphorins constitute a large family of secreted and membrane-tethered proteins that bind to Plexin receptors, and in some cases Neuropilin co-receptors, to regulate axon guidance. Additional guidance signals are mediated by members of the Roundabout (ROBO) family of receptors through binding to one of three Slit family proteins (Slit1-3). Semaphorins and Slits have classically been described as regulators of growth cone collapse and axon repulsion, but these effects are not absolute.²⁻⁵ Under certain conditions, Slits promote neurite outgrowth and axon branching, while Semaphorins act as chemoattractants.⁶⁻⁸ These distinct effects, mediated by the same receptors, likely play a critical role in nervous system development.

R&D Systems is offering several new tools to study molecules associated with neuronal growth and guidance: Recombinant Slit2 and Semaphorin 3B (page 2), antibodies to Semaphorin 4B (page 4), Semaphorin 6A (page 8), ROBO1 (page 7), and Plexin-B2 (pages 4 and 7). Please visit our website at www.RnDSystems.com/go/AxonGuidance for a complete product listing.



Slit2 Enhances Neurite Outgrowth. Cultured chick dorsal root ganglion neurons were grown in the presence of recombinant human β -NGF (Catalog # 256-GF), with (A) or without (B) recombinant mouse Slit2 (Catalog # 5444-SL). The presence of the Slit2 protein significantly enhanced neurite outgrowth.

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Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
<i>continued from page 3.</i>				
NF2/Merlin	Human	Goat IgG	AF5616	100 μ g
NGL-1	Human	Sheep IgG	AF4899	100 μ g
Noelin-2	Human	Sheep IgG	AF5614	100 μ g
Notch-1	Human	Sheep IgG	AF5317	100 μ g
NPDC-1	Human	Sheep IgG	AF5489	100 μ g
ORP150	Human	Goat IgG	AF5558	100 μ g
PEA-15	Human/Mouse	Sheep IgG	AF5588	100 μ g
PEDF R	Human/Mouse/Rat	Sheep IgG	AF5365	100 μ g
PIBF1	Human	Sheep IgG	AF5559	100 μ g
PKC α	Human/Mouse/Rat	Goat IgG	AF5340	100 μ g
PLD1	Human	Goat IgG	AF5615	100 μ g
Plexin B2	Human	Sheep IgG	AF5329	100 μ g
POT1	Human	Sheep IgG	AF5299	100 μ g
PP2C γ /PPM1G	Human	Goat IgG	AF5595	100 μ g
PREB	Human	Goat IgG	AF5557	100 μ g
Protocadherin α 1	Human	Sheep IgG	AF5064	100 μ g
PRR5	Human	Goat IgG	AF5309	100 μ g
RARRES1	Human	Goat IgG	AF4255	100 μ g
RASSF2	Human/Mouse	Goat IgG	AF5639	100 μ g
Renalase	Human	Goat IgG	AF5350	100 μ g
Phospho-Ret (Y1062)	Human	Rabbit IgG	AF5009	100 μ g
SALM4/LRFN3	Human	Goat IgG	AF5349	100 μ g
SAM68	Human/Mouse	Sheep IgG	AF5509	100 μ g
SCAMP3	Human/Mouse	Sheep IgG	AF5344	100 μ g
Semaphorin 4B	Human	Goat IgG	AF5485	100 μ g
SGPL1	Human	Goat IgG	AF5535	100 μ g
SMOC-1	Mouse/Rat	Goat IgG	AF5550	100 μ g
SOX5	Human	Goat IgG	AF5286	100 μ g
SRPK2	Human	Goat IgG	AF5530	100 μ g
Phospho-STAT3 (S727)	Human	Rabbit IgG	AF4934	100 μ g
Stathmin/STMN1	Human/Mouse/Rat	Sheep IgG	AF5454	100 μ g
Synaptophysin	Human	Goat IgG	AF5555	100 μ g
Syntabulin	Human	Goat IgG	AF5544	100 μ g
Syntaxin 7	Human/Mouse/Rat	Sheep IgG	AF5478	100 μ g
Syntaxin 8	Human/Mouse/Rat	Sheep IgG	AF5448	100 μ g
Syntaxin 16	Human	Sheep IgG	AF5648	100 μ g
Talin1	Human/Mouse/Rat	Goat IgG	AF5456	100 μ g
α -Taxilin	Human	Sheep IgG	AF5575	100 μ g
TEM8	Human	Goat IgG	AF3886	100 μ g
TGF- β RIII	Mouse	Goat IgG	AF5034	100 μ g
Thrombospondin-1	Human	Goat IgG	AF3074	100 μ g
TRAP220	Human/Mouse	Goat IgG	AF5520	100 μ g
TREML4/TLT-4	Mouse	Goat IgG	AF5500	100 μ g
TRF-1	Human	Sheep IgG	AF5300	100 μ g
TRIM63	Human/Mouse/Rat	Goat IgG	AF5366	100 μ g
Phospho-TrkA (Y785)	Human/Rat	Rabbit IgG	AF5479	100 μ g
<i>continued on page 5.</i>				

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
<i>continued from page 4.</i>				
Trypsase-5/Prss32	Mouse	Goat IgG	AF2634	100 µg
VSIG1	Mouse/Rat	Goat IgG	AF5324	100 µg
WASF1/WAVE1	Human/Mouse	Goat IgG	AF5514	100 µg
WASF3/WAVE3	Human/Mouse	Goat IgG	AF5515	100 µg
ZIC3	Human/Mouse	Sheep IgG	AF5310	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
ACE-2	Mouse	460502	MAB3437	100 µg
ADAM23	Human	504425	MAB4974	100 µg
ADAM33	Human	508101	MAB5565	100 µg
Aminopeptidase PILS/ARTS1	Human/Mouse	6H9	MAB2334	100 µg
ASAH1	Human	511702	MAB4494	100 µg
ATG4A	Human	514914	MAB4324	100 µg
CSL2	Mouse	468705	MAB4729	100 µg
CaM Kinase II α	Human	525501	MAB5584	100 µg
Carboxypeptidase A1/CPA1	Human	477305	MAB2856	100 µg
CD39/ENTPD1	Mouse	495826	MAB4398	100 µg
CD39L2/ENTPD6	Human	494402	MAB4399	100 µg
CD63	Mouse	446703	MAB5417	100 µg
CDCP1	Mouse	469114	MAB45151	100 µg
Complement Factor H-related 2/CFHR2	Human	510511	MAB5484	100 µg
COX-2	Human	495222	MAB4198	100 µg
CKMM	Human	492731	MAB5564	100 µg
CTBS	Human	486725	MAB4829	100 µg
CXCL8/IL-8	Feline	344615	MAB22772	500 µg
DPP10	Human	453601	MAB4100	100 µg
EMR1	Mouse	521204	MAB5580	100 µg
EMR2	Human	494025	MAB4894	100 µg
ErbB2/HER2	Human	416711	MAB11291	100 µg
FAK	Human	495919	MAB4467	100 µg
FCRL5/FcRH5	Human	307307	MAB20871	100 µg
Fibronectin	Human	P1F11	MAB19181	100 µg
FKBP12	Human/Mouse/Rat	422513	MAB3777	100 µg
Glutathione Peroxidase 2	Human/Mouse/Rat	496010	MAB5470	100 µg
Glycoprotein V/CD42d	Human	508209	MAB4249	100 µg
GM-CSF	Canine	249201	MAB1546	500 µg
Hepsin	Human	506220	MAB4776	100 µg
HHV8-ORF74	Viral	462510	MAB5264	100 µg
HSP20/HSPB6	Human/Mouse/Rat	494310	MAB4200	100 µg
IL-11 R α	Human	473143	MAB1977	100 µg
Integrin β 6	Human	437216	MAB41551	100 µg
Integrin β 7	Human	473207	MAB4669	100 µg
IRF4 Catalytic Subunit	Human/Mouse	503215	MAB5525	100 µg
<i>continued on page 6.</i>				

Proprotein Convertase 9: Recombinant Protein & ELISA Kit

Proprotein Convertase 9 is encoded by the PCSK9 gene. The deduced amino acid sequence consists of a signal peptide [amino acid (aa) residues 1-30], a pro domain (aa residues 31-152), and a mature chain (aa residues 153-692).

PCSK9 is a key regulator of LDL-cholesterol levels (LDL-C). It binds the LDL receptor (LDL R) resulting in a reduction in receptor recycling to the cell surface and an acceleration of receptor degradation in lysosomes.¹ Both gain of function (GOF) and loss-of-function (LOF) mutations have been described. GOF mutations are linked to familial autosomal dominant hypercholesterolemia, a disease characterized by elevated plasma levels of LDL-C. In contrast, LOF mutations lead to low levels of LDL-C and protect against coronary heart disease. In addition, serum PCSK9 concentrations have been shown to correlate with cholesterol levels.^{2,3} For these reasons, PCSK9 has become an attractive drug target.^{4,5}

R&D Systems is now offering recombinant human PCSK9 (Catalog # 3888-SE). The protein, purified from mammalian NS0 cells, consists of both the mature chain and the pro domain associated through non-covalent interactions. Recombinant human PCSK9 is capable of binding LDL R (Catalog # 2148-LD).

In addition, a Quantikine® Human PCSK9 Immunoassay Kit (Catalog # DPC900) has been designed to measure PCSK9 in cell culture supernates, cell lysates, serum, and plasma. The assay recognizes PCSK9 in both its free form and when complexed with LDL R, even though the two forms may have distinct conformations.⁶ The kit has a standard curve range of 0.625-40 ng/mL, and does not recognize free LDL R or related members of the Furin/PC family, including recombinant human Furin (Catalog # 1503-SE), PCSK1 (Catalog # 2810-SE), or PCSK7 (Catalog # 2984-SE).

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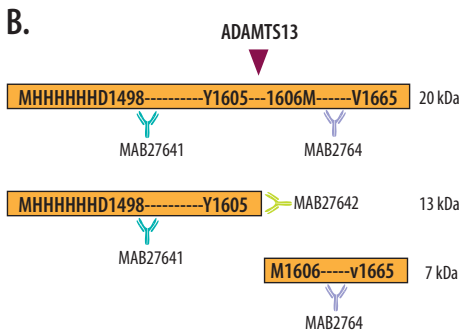
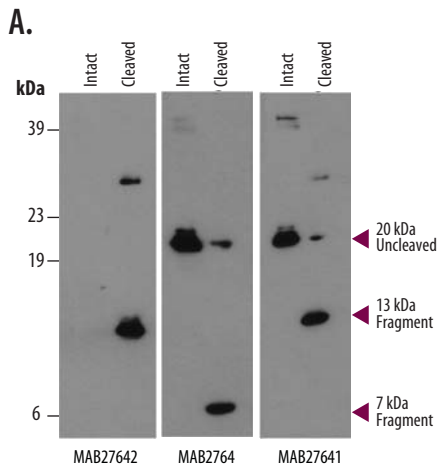
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Antibody to a Neopeptide of von Willebrand Factor Generated by ADAMTS13 Cleavage

Human von Willebrand Factor (vWF) is a serum glycoprotein that mediates platelet adhesion to injured vascular endothelium. vWF function is regulated by ADAMTS13-mediated proteolysis. Mutations of this protease cause thrombotic thrombocytopenic purpura (TTP).

R&D Systems is now offering a new antibody (Catalog # MAB27642) that recognizes a neopeptide of vWF generated by ADAMTS13 cleavage.



ADAMTS13 Cleavage Product-specific anti-Human vWF-A2. A. Western blots containing recombinant human vWF-A2, both intact and cleaved by recombinant human ADAMTS13 (Catalog # 4245-AD), were analyzed using three monoclonal antibodies. Anti-human vWF-A2 (Catalog # MAB27642) reacts only with the N-terminal fragment. In comparison, other anti-human vWF-A2 antibodies (Catalog # MAB2764 and MAB27641) recognize both the intact molecule and the cleaved fragment that contains their epitope. Higher molecular masses at about 26 kDa and 40 kDa could be dimers of the N-terminal fragment and intact vWF-A2, respectively. **B.** The diagram depicts the recombinant human vWF-A2 domain (Catalog # 2764-WF) and ADAMTS13 cleaved fragments with their molecular masses and relative locations of the epitopes recognized by the three antibodies.

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
<i>continued from page 5.</i>				
Jak3	Human	452524	MAB46991	100 µg
JunD	Human/Mouse	512709	MAB5526	100 µg
M-CSF R	Mouse	460630	MAB38181	100 µg
NOV/CEN3	Mouse	231226	MAB19762	500 µg
OX40 Ligand/TNFSF4	Mouse	182609	MAB12362	500 µg
p27/Kip1	Human/Mouse/Rat	341116	MAB22561	100 µg
Paxillin	Human	492918	MAB4259	100 µg
Peroxiredoxin 6	Human	477068	MAB3490	100 µg
PGRP- β	Human	474034	MAB3018	100 µg
Proprotein Convertase 9	Human	499911	MAB38882	100 µg
Prostasin/Prss8	Mouse	430814	MAB2968	100 µg
Reg IIIb	Mouse	518630	MAB5110	100 µg
S100A4	Mouse	438709	MAB4138	100 µg
S100A9	Human	474315	MAB5578	100 µg
Serpin B5/Maspin	Human	305339	MAB2218	100 µg
Serpin E2/PN1	Human	449888	MAB2980	100 µg
STAT4	Human/Mouse	513710	MAB5287	100 µg
Synuclein- β	Human	516505	MAB5528	100 µg
T-bet/TBX21	Human	525803	MAB5385	100 µg
Tollip	Human/Rat	503315	MAB4678	100 µg
TRIM	Human	488806	MAB4708	100 µg
VEGF R2/KDR/Flk-1	Mouse	522302	MAB4432	100 µg
vWF-A2 (ADAMTS13-cleaved)	Human	490628	MAB27642	100 µg
Wnt-4	Human/Mouse	55025	MAB4751	100 µg

Labeled Antibodies

Biotinylated Antibodies

Antibody	Species	Type	Catalog #	Size
ADAM12	Human	Sheep IgG	BAF4416	50 µg
Biglycan	Human	Goat IgG	BAF2667	50 µg
BMP-4	Human	Goat IgG	BAF757	50 µg
BSRP-A	Human/Mouse	Sheep IgG	BAF4916	50 µg
β -Catenin	Human/Mouse/Rat	Goat IgG	BAF1329	50 µg
CD38	Human	Sheep IgG	BAF2404	50 µg
CD38	Mouse	Sheep IgG	BAF4947	50 µg
CD157	Mouse	Sheep IgG	BAF4710	50 µg
CD-M6PR	Human	Goat IgG	BAF5320	50 µg
CREB	Human	Goat IgG	BAF2989	50 µg
CRTAC1	Human	Sheep IgG	BAF5234	50 µg
CXCL8/IL-8	Feline	Rat IgG _{2b}	BAM22771	100 µg
Fetuin A/AHSG	Mouse	Rat IgG _{2a}	BAM15631	250 µg
GASP-2/WFIKKN	Human	Mouse IgG _{2b}	BAM21362	250 µg
GLI-1	Human/Mouse	Goat IgG	BAF3455	50 µg
IFN- γ	Equine	Goat IgG	BAF1586	50 µg

continued on page 7.

Labeled Antibodies

Biotinylated Antibodies

Antibody	Species	Type	Catalog #	Size
<i>continued from page 6.</i>				
Myeloperoxidase	Mouse	Goat IgG	BAF3667	50 µg
Neuroplastin	Human	Sheep IgG	BAF5174	50 µg
Notch-1	Human	Sheep IgG	BAF5317	50 µg
NOV/CCN3	Mouse	Rat IgG ₁	BAM19761	250 µg
OX40 Ligand/TNFSF4	Mouse	Rat IgG _{2b}	BAM12361	250 µg
p300	Human	Goat IgG	BAF3789	50 µg
Plexin B2	Human	Sheep IgG	BAF5329	50 µg
Protogenin	Mouse	Sheep IgG	BAF4919	50 µg
ROBO1	Rat	Goat IgG	BAF1749	50 µg
SCARA5	Human	Sheep IgG	BAF4900	50 µg
SCF	Canine	Goat IgG	BAF2278	50 µg
SLAM/CD150	Human	Sheep IgG	BAF164	50 µg
Stanniocalcin 1	Human	Goat IgG	BAF2958	50 µg
TEM7	Human	Sheep IgG	BAF5327	50 µg
TNFRH3/TNFRSF26	Mouse	Sheep IgG	BAF5330	50 µg
TREML4/TLT-4	Mouse	Goat IgG	BAF5500	50 µg
VLDLR	Mouse	Goat IgG	BAF2258	50 µg

Labeled Antibodies

Fluochrome-labeled Antibodies

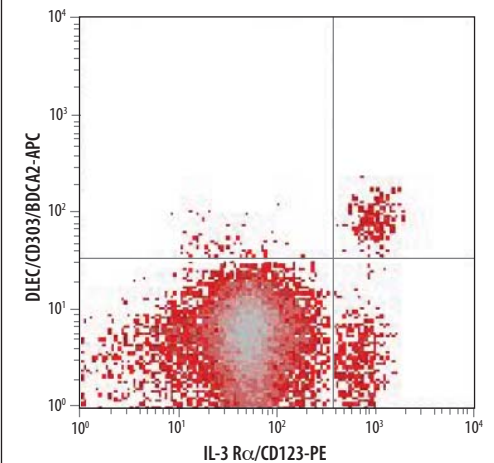
Antibody	Species	Label	Catalog #	Size
CCR1	Human	Allophycocyanin	FAB145A	100 Tests
CD3ε	Human	PerCP	FAB100C	100 Tests
CD8α	Human	PerCP	FAB1509C	100 Tests
CD19	Human	PerCP	FAB4867C	100 Tests
CD39/ENTPD1	Mouse	Allophycocyanin	FAB4398A	100 Tests
CD39/ENTPD1	Mouse	Fluorescein	FAB4398F	100 Tests
CD39/ENTPD1	Mouse	Phycoerythrin	FAB4398P	100 Tests
CD44v3	Human	Allophycocyanin	FAB5088A	100 Tests
CD44v4/5	Human	Phycoerythrin	FAB5399P	100 Tests
CD81	Human	Allophycocyanin	FAB4615A	100 Tests
CD81	Human	Fluorescein	FAB4615F	100 Tests
CD81	Human	Phycoerythrin	FAB4615P	100 Tests
CD82/Kai-1	Human	Allophycocyanin	FAB4616A	100 Tests
CD200 R1	Mouse	Phycoerythrin	FAB2554P	100 Tests
DLEC/CLEC4C/BDCA2	Human	Allophycocyanin	FAB1376A	100 Tests
DLEC/CLEC4C/BDCA2	Human	Fluorescein	FAB1376F	100 Tests
EPCR	Mouse	Allophycocyanin	FAB2749A	100 Tests
EPCR	Mouse	Phycoerythrin	FAB2749P	100 Tests
ErbB3/HER3	Human	PerCP	FAB3481C	100 Tests
ErbB4/HER4	Human	Allophycocyanin	FAB11311A	100 Tests
ErbB4/HER4	Human	Phycoerythrin	FAB11311P	100 Tests
Fas/TNFRSF6/CD95	Mouse	Allophycocyanin	FAB435A	100 Tests
IGF-1 R	Human	PerCP	FAB391C	100 Tests

continued on page 8.

Dendritic Cell Markers: The BDCA Family

Blood dendritic cells (BDCs) are rare populations of key antigen-presenting cells found in the peripheral blood. BDCs are HLA-DR⁺ and do not express CD3, CD14, CD19, or CD56. Identification of these DC populations, and characterization into functional subsets, has been made possible with the development of antibodies specific for cell-surface markers.¹

The BDCA family of proteins has four members, also known by other names: BDCA1/CD1c, BDCA2/CD303/CLEC4C/DLEC, BDCA3/CD141/Thrombomodulin, and BDCA4/CD304/Neuropilin-1. This family of cell-surface antigens has been used to identify subsets of BDCs found in peripheral blood.² Plasmacytoid dendritic cells (pDCs) are thought to arise from lymphocyte precursors, express CD45RA, and are dependent on IL-3 for survival. They express IL-3 Rα/CD123 and are CD11c⁻. In addition, pDCs have been shown to express DLEC/BDCA2 and Neuropilin-1/BDCA4. Monocytoid DCs are CD45RO⁺, CD11c⁺, CD123⁺, and express Thrombomodulin/BDCA3.³ In conjunction with other cell surface markers, BDCA family members are useful in identifying and isolating peripheral blood DCs.



DLEC/BDCA2 and IL-3 Rα Cell Populations Detected by Flow Cytometry. Human PBMCs were stained with APC-conjugated anti-human DLEC/CD303/BDCA2 (Catalog # FAB1376A) and PE-conjugated anti-human IL-3 Rα/CD123 (Catalog # FAB301P). Quadrant markers were set based on isotype control staining (Catalog # IC108A and IC002P).

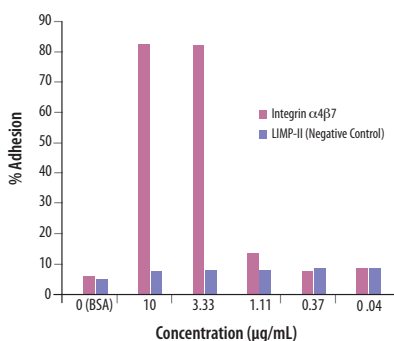
References

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Integrins: Unique Ligands & Functions

Integrins mediate adhesion to multiple ligands in adjacent cells and the extracellular matrix (ECM). Despite often sharing subunits, each integrin transmembrane heterodimer has its own expression patterns and/or ligands.^{1,2} For example, of the twelve integrins that share the $\beta 1$ subunit, only $\alpha 9\beta 1$ binds the vascular endothelial growth factors VEGF-C and VEGF-D, giving it a unique role in lymphangiogenesis.³ Laminin-binding integrins $\alpha 3\beta 1$ and $\alpha 6\beta 4$ are expressed on epithelia where they mediate basement membrane attachment.^{1,2,4} However, only $\alpha 6\beta 4$ binds cytoplasmic hemidesmosome components and is required for hemidesmosome formation.⁴ Another epithelial integrin, $\alpha V\beta 6$, is one of a small group of integrins that can bind and activate the TGF- β latent complex. It is upregulated upon injury or inflammation in kidney, lung, and skin.⁵ Another αV integrin, $\alpha V\beta 3$, is most highly expressed on osteoclasts during maturation, and facilitates their binding and resorption of bone.⁶ $\beta 7$ integrins, $\alpha 4\beta 7$ and $\alpha E\beta 7$, share some ligands, and are both expressed in the intestinal immune system. However, it is MAdCAM-1 binding to $\alpha 4\beta 7$ that is critical for homing of leukocytes to Peyer's patches, while $\alpha E\beta 7$ binding to E-cadherin on intestinal epithelia is important for the localization of specialized intra-epithelial lymphocytes.⁷

R&D Systems is now offering several new recombinant integrins (page 2) and a range of new integrin antibodies (pages 3, 5, and 8)



Integrin $\alpha 4\beta 7$ Promotes Adhesion of CHO Cells Transfected with VCAM-1. VCAM-1-transfected CHO cells were added to a plate with recombinant human Integrin $\alpha 4\beta 7$ coated at the indicated concentrations. At 3-10 $\mu\text{g/mL}$, approximately 80% of the cells adhered after one hour. As a comparison, wells coated with recombinant mouse LIMP-II (negative control) did not show adhesion above background levels (BSA).

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Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Label	Catalog #	Size
<i>continued from page 7.</i>				
Integrin $\alpha 3/\text{CD}49\text{c}$	Mouse	Allophycocyanin	FAB2787A	100 Tests
Integrin $\alpha 3/\text{CD}49\text{c}$	Mouse	Phycoerythrin	FAB2787P	100 Tests
Integrin $\alpha \text{E}/\text{CD}103$	Mouse	Allophycocyanin	FAB1990A	100 Tests
Integrin $\alpha \text{E}/\text{CD}103$	Mouse	Phycoerythrin	FAB1990P	100 Tests
Integrin $\alpha \text{V}/\beta 3$ (CD51/CD61)	Human	Allophycocyanin	FAB3050A	100 Tests
Islet-1	Human	NorthernLights-557	NL1837R	500 μL
KIR3DL1	Human	Phycoerythrin	FAB1225P	100 Tests
NKp44	Human	Phycoerythrin	FAB22491P	100 Tests
Notch-2	Rat	Allophycocyanin	FAB1190A	100 Tests
Notch-2	Rat	Fluorescein	FAB1190F	100 Tests
Notch-2	Rat	Phycoerythrin	FAB1190P	100 Tests
Semaphorin 6A	Human	Allophycocyanin	FAB1146A	100 Tests
Siglec-2/CD22	Mouse	Allophycocyanin	FAB2296A	100 Tests
Siglec-2/CD22	Mouse	Fluorescein	FAB2296F	100 Tests
Siglec-2/CD22	Mouse	Phycoerythrin	FAB2296P	100 Tests
SOX9	Human	NorthernLights-557	NL3075R	500 μL
SOX10	Human/Rat	NorthernLights-557	NL2864R	500 μL
Syndecan-3	Human	Allophycocyanin	FAB3539A	100 Tests
T-bet/TBX21	Human	Fluorescein	ICS385F	100 Tests
T-bet/TBX21	Human	PerCP	ICS385C	100 Tests
Thrombomodulin/CD141	Mouse	Allophycocyanin	FAB3894A	100 Tests
Thrombomodulin/CD141	Mouse	Fluorescein	FAB3894F	100 Tests
Thrombomodulin/CD141	Mouse	Phycoerythrin	FAB3894P	100 Tests
VEGF R2/KDR/Flk-1	Mouse	Allophycocyanin	FAB4432A	100 Tests
VEGF R2/KDR/Flk-1	Mouse	Phycoerythrin	FAB4432P	100 Tests

Secondary Antibodies

Product	Species	Catalog #	Size
Goat Anti-Rat IgG HRP	Rat	HAF005	1 mL
Goat Anti-Mouse IgM Allophycocyanin	Mouse	F0117	100 Tests
Goat Anti-Mouse IgM Fluorescein	Mouse	F0118	100 Tests
Goat Anti-Mouse IgM Phycoerythrin	Mouse	F0116	100 Tests
Goat Anti-Mouse IgM PerCP	Mouse	F0119	100 Tests

Quantikine® ELISA Kits

Analyte	Species	Sensitivity	Range	Catalog #	Size
Angiotensin-like 3	Mouse	9.62 pg/mL	62.5-4000 pg/mL	MANL30	1 Kit
GDF-15	Human	4.39 pg/mL	23.4-1500 pg/mL	DGD150	1 Kit
IL-19	Human	12.2 pg/mL	31.2-2000 pg/mL	D1900	1 Kit
Progranulin	Human	0.54 ng/mL	1.56-100 ng/mL	DPGRN0	1 Kit
Proprotein Convertase 9	Human	0.219 ng/mL	0.625-40 ng/mL	DPC900	1 Kit

ELISpot Kits

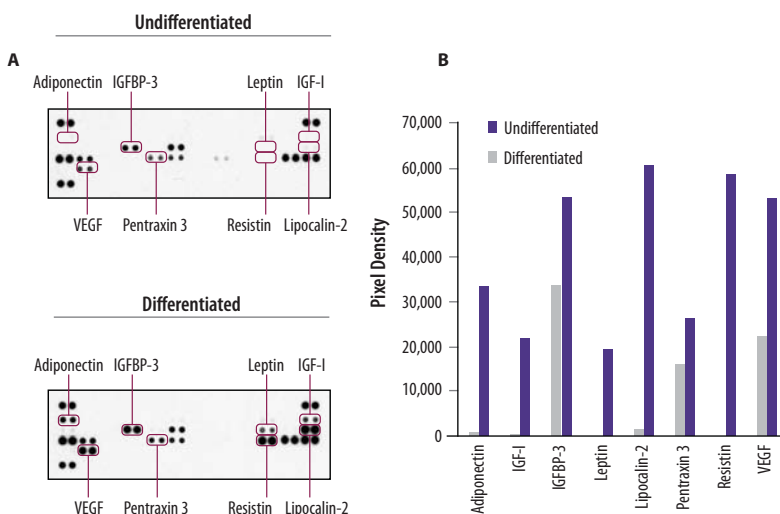
Analyte	Species	Catalog #	Size
IFN- γ (Development Module)	Equine	SEL1586	1 Kit
IL-4 (Development Module)	Equine	SEL1809	1 Kit
IFN- γ	Equine	EL1586	1 Kit
IL-4	Equine	EL1809	1 Kit
IFN- γ /IL-10 Dual Color	Human	ELD5505	1 Kit
IL-4/IL-17 Dual Color	Mouse	ELD5506	1 Kit

Proteome Profiler™ Antibody Arrays

Product	Description	Catalog #	Size
Mouse Obesity Array Kit	Measures 38 different obesity-related molecules	ARY013	1 Kit
<ul style="list-style-type: none"> • Adiponectin • AgRP • ANGPT-L3 • CCL2/MCP-1/JE • CCL5/RANTES • CRP • DPPIV/CD26 • Endocan • Fetuin A • FGF acidic • FGF-21 • HGF • ICAM-1 • IGF-1 • IGF-II • IGFBP-1 • IGFBP-2 • IGFBP-3 • IGFBP-5 • IGFBP-6 • IL-6 • IL-10 • IL-11 • Leptin • LIF • Lipocalin-2/NGAL • M-CSF • OSM • PAI-1/Serpin E1 • Pentraxin 2 • Pentraxin 3 • Pref-1 • RAGE • RBP4 • Resistin • TIMP-1 • TNF-α • VEGF 			

Proteome Profiler Mouse Obesity Array Kit

R&D Systems now offers a Mouse Obesity Antibody Array Kit (Catalog # ARY013). This kit provides a rapid, sensitive method to simultaneously detect the relative levels of 38 obesity-related proteins in a single sample. Each kit includes 4 arrays spotted in duplicate with antibodies to detect adipocytokines, pro-inflammatory cytokines, IGFFBPs, and others (see table above). Antibody arrays require no specialized equipment. For more information, please visit our website at www.RnDSystems.com/go/ProteomeProfiler.



Multiple Proteins in Cell Culture Supernatants from Undifferentiated and Differentiated 3T3-L1 Cells were Assessed using the Mouse Obesity Array. **A.** The Proteome Profiler Mouse Obesity Array (Catalog # ARY013) was used to simultaneously assess the relative levels of 38 obesity-related proteins in cell culture supernatants from undifferentiated 3T3-L1 mouse preadipocytes (top) and differentiated 3T3-L1 adipocytes (bottom). **B.** Histogram profiles for select proteins were generated by quantifying the mean spot pixel density from the arrays using image software analysis. Gray bars represent protein levels in supernatants from undifferentiated 3T3-L1 cells and purple bars represent protein levels in supernatants from differentiated 3T3-L1 cells.

GDF-15: A New Quantikine ELISA

Growth and differentiation factor-15 (GDF-15) is a divergent member of the TGF- β superfamily.¹⁻³ It is synthesized as a 40 kDa inactive precursor that is then cleaved to release the active C-terminal fragment. These fragments assemble into the biologically active, 28 kDa homodimer.^{1,4} In humans, GDF-15 is predominantly expressed in the placenta, with low levels also found in the kidney, pancreas, and prostate. However, its expression can be rapidly induced by cytokines such as IL-1 and TGF- β .¹⁻³

GDF-15 plays an important role in tumorigenesis and metastasis, and the expression is dramatically increased in colorectal, breast, and prostate cancers.⁵⁻⁷ Additionally, serum levels of GDF-15 are elevated in cancer patients, making the protein valuable in disease diagnosis and stratification. The tumor suppressor gene, p53, and other anti-tumorigenic agents such as non-steroidal anti-inflammatory drugs and PPAR- γ , strongly induce GDF-15. These findings suggest that GDF-15 may be a downstream target of signaling pathways that regulate cell cycle arrest and apoptosis.⁸

GDF-15 also has cardioprotective functions. In mouse models, induction of GDF-15 protects the heart from ischemia/reperfusion injury and its overexpression attenuates ventricular dilation and heart failure. Conversely, reduction of GDF-15 expression leads to cardiac hypertrophy.⁹

In addition, GDF-15 is involved in iron homeostasis. In patients with β -thalassemia, serum levels are elevated, which results in the suppression of the iron regulatory protein Hcpidin.¹⁰ Significant induction of GDF-15 has been observed in individuals with iron deficiency as well.¹¹

R&D Systems is now offering a Quantikine Human GDF-15 Immunoassay. It is a 3.5 hour solid phase ELISA designed to measure GDF-15 in cell culture supernates, serum, plasma, and urine. For details, please see page 8 or our website at www.RnDSystems.com.

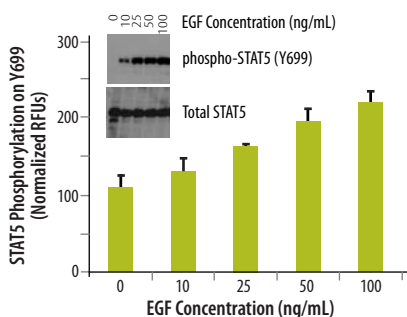
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Phospho-STAT5 (Y699) Cell-Based ELISA

Signal transduction and activator of transcription 5 (STAT5) is a member of the Janus kinase (Jak)/STAT signal transduction pathway and is activated by a variety of cytokines, including IL-22, IL-6, and IFN- α . In addition, the Src family of cytoplasmic protein tyrosine kinases (e.g. Hck and Lyn) can also activate STAT5 independently of Jak2 to transduce signals from the erythropoietin and epidermal growth factor (EGF) receptors.^{1,2} STAT5 mediates cytokine signaling by acting as a signal transducer in the cytoplasm and, upon phosphorylation, translocates to the nucleus and activates the transcription of specific genes. Phosphorylation of STAT5 at Y699 is essential for dimerization and subsequent nuclear translocation.³ STAT5 has two isoforms (A and B) that share ~93% amino acid identity.⁴ STAT5 is involved in a wide array of biological processes ranging from regulating apoptosis to adult mammary gland proliferation, differentiation, and survival.

R&D Systems now offers a human/mouse phospho-STAT5 (Y699) Cell-Based ELISA for measurement of STAT5 phosphorylation in intact cells without the need for lysate preparation. The dual-detection capability of this assay allows for the simultaneous normalization of well-to-well variations by ratiometric analysis of both phosphorylated and total STAT5 in the same microplate well. For more information on new Cell-Based ELISAs, please see the table to the right or visit our website at www.RnDSystems.com/goCellBasedELISA for a complete listing of available Assays.



EGF-induced STAT5 Phosphorylation (Y699) in Human Epidermoid Carcinoma Cells. A431 human epidermoid carcinoma cells were treated with the indicated amounts of recombinant human EGF (Catalog # 236-EG). Phosphorylation of STAT5 on Y699 was determined using the human/mouse phospho-STAT5 (Y699) Cell-Based ELISA (Catalog # KCB4190) and normalized to total STAT5 in the same wells (histogram). Detection of STAT5 phosphorylation on Y699 by Western blotting is shown for comparison (inset).

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Cell-Based ELISA Base Kits

For Cell-Based ELISA Development

Analyte	Secondary Antibodies	Catalog #	Size
Cell-Based ELISA Base Kit 6	anti-Rabbit-AP anti-Mouse-HRP	KCB006	2 Plates

AP: Alkaline Phosphatase HRP: Horseradish Peroxidase

Cell-Based ELISA Kits

Analyte	Species	Catalog #	Size
Phospho-FRS2 (Y436)	Human/Mouse/Rat	KCB5126	1 Kit
Phospho-PDGF R β (Y1021)	Mouse	KCB1042	1 Kit
Phospho-STAT5 (Y699)	Human/Mouse	KCB4190	1 Kit

ELISA & Activity Assay Development Kits

DuoSet[®] ELISA Development Systems

Analyte	Species	Catalog #	*Reagents for
ADAM9	Human	DY939	15 Plates
β IG-H3	Mouse	DY2559	15 Plates
Cathepsin L	Human	DY952	15 Plates
CRTAM	Human	DY1695	15 Plates
DLL4	Mouse	DY1389	15 Plates
Fetuin A/AHSG	Mouse	DY1563	15 Plates
Gas1	Human	DY2636	15 Plates
gp130	Mouse	DY468	15 Plates
HGF R/c-MET	Canine	DY4140	15 Plates
IL-4	Equine	DY1809	15 Plates
IL-22	Mouse	DY582	15 Plates
IL-33	Mouse	DY3626	15 Plates
Nope	Mouse	DY1394	15 Plates
NOV/CCN3	Mouse	DY1976	15 Plates
Osteoactivin/GPNMB	Mouse	DY2330	15 Plates
Park7/DJ-1	Human	DY3995	15 Plates
PRDC	Mouse	DY2069	15 Plates
SCF	Canine	DY2278	15 Plates
TFPI	Human	DY2974	15 Plates
Tie-2	Human	DY5159	15 Plates

DuoSet IC (Intracellular) ELISAs & Activity Assays

Analyte	Species	Catalog #	*Reagents for
Total Clusterin	Human	DYC2937-2	2 Plates
Phospho-EGF R (Y1068)	Human	DYC3570-2	2 Plates
Phospho-Erythropoietin R	Human	DYC5200-2	2 Plates
Total Numb	Human/Mouse/Rat	DYC4338-2	2 Plates
Total Pin1	Human/Mouse	DYC2294-2	2 Plates
Phospho-Yes (Y426)	Human	DYC3929-2	2 Plates

ExactaChIP™ Chromatin Immunoprecipitation Kits

Analyte	Species	Catalog #	Size
HIF-2 α	Human	ECP2886	1 Kit
Ikaros	Human	ECP4984	1 Kit
NF κ B1	Human	ECP2697	1 Kit
NF κ B2	Human	ECP28881	1 Kit
RelA	Human	ECP5078	1 Kit
c-Rel	Human	ECP2699	1 Kit
SOX17	Mouse	ECP1924	1 Kit
T-bet/TBX21	Human	ECP5385	1 Kit

Cell & Tissue Staining Kits

Analyte	Species	Catalog #	Size
Anti-Sheep HRP-DAB Cell & Tissue Staining Kit	Sheep	CTS019	50 Tests
Anti-Sheep HRP-AEC Cell & Tissue Staining Kit	Sheep	CTS020	50 Tests

Cell Culture & Stem Cell Reagents

Product	Species	Catalog #	Size
Multipotent Mesenchymal Stromal Cell Marker Panel	Human	SC017	1 Kit

• Stro-1 • CD90 • CD106 • CD105 • CD146 • CD166 • CD44 • CD19 • CD45

PlusCollect™ Cell Selection & Detection Kits

Analyte	Species	Catalog #	Size
E-Cadherin	Mouse	PLS748	1 Kit
Sca-1/Ly6	Mouse	PLS1226	1 Kit

Fluorokine® Flow Cytometry Kits

Labeled Ligands to Measure Receptor Density

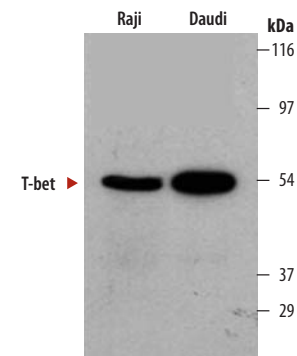
Analyte	Species	Catalog #	Size
BMP-4	Human	NFBMP4	1 Kit
BMP-9	Human	NFBMP9	1 Kit
Erythropoietin	Human	NFEPO	1 Kit

Flow Cytometry Buffers

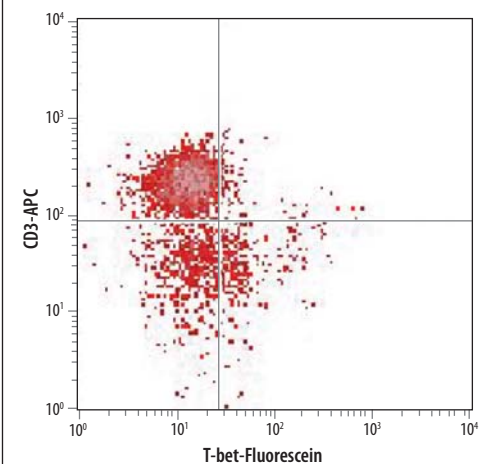
Analyte	Species	Catalog #	Size
Flow Cytometry Staining Buffer (1X)		FC001	500 mL
Flow Cytometry Fixation Buffer (1X)		FC004	100 mL
Flow Cytometry Permeabilization/Wash Buffer I (1X)		FC005	250 mL
Flow Cytometry Fixation/Permeabilization Buffer I (1X)		FC007	125 mL
Flow Cytometry Fixation/Permeabilization Buffer Kit I		FC009	1 Kit
Flow Cytometry Human Lyse Buffer (10X)	Human	FC002	50 mL
Flow Cytometry Mouse Lyse Buffer (10X)	Mouse	FC003	50 mL

T-bet Antibodies

A type 1 immune reaction occurs in response to intracellular virus or bacterial infections. IFN- γ is the signature cytokine of the type 1 immune response and can be produced by a variety of cell types. T-bet is a T-box family transcription factor that is a master regulator of the type 1 response,^{1,2} and its expression is commonly monitored as an indicator of type 1 immunity. T-bet is required for the generation of an appropriate type 1 response and production of IFN- γ by Th1 cells, dendritic cells, and NK cells.^{1,2} Expression of T-bet in B cells is required for development into Th1-inducing Be1 cells³ and class switch recombination to IgG_{2A} in response to IFN- γ .⁴ Accumulating evidence also supports a role for T-bet in autoimmune pathogenesis.¹



Detection of T-bet by Western Blot. T-bet was detected by Western blot in lysates from Raji and Daudi cells (human Burkitt's lymphoma cells) using mouse anti-human T-bet monoclonal antibody (Catalog # MAB5385).



T-bet and CD3 Expression in PBMCs by Flow Cytometry. Human peripheral blood mononuclear cells (PBMCs) were stained with Fluorescein-conjugated anti-human T-bet (Catalog # IC5385F) and APC-conjugated anti-human CD3 (Catalog # FAB100A). Quadrant markers were set based on isotype control staining (Catalog # IC002F and IC002A).

References

1. Peng, S. (2006) Cell. Mol. Immunol. **3**:87.
2. Glimcher, L. (2007) Nat. Immunol. **8**:448.
3. Harris, D. et al. (2005) J. Immunol. **174**:6781.
4. Peng, S. et al. (2002) Proc. Natl. Acad. Sci. USA **99**:5545.



R&D Systems, Inc.
 614 McKinley Place NE
 Minneapolis, MN 55413
 Tel: (800) 343-7475
 (612) 379-2956
 Fax: (612) 656-4400
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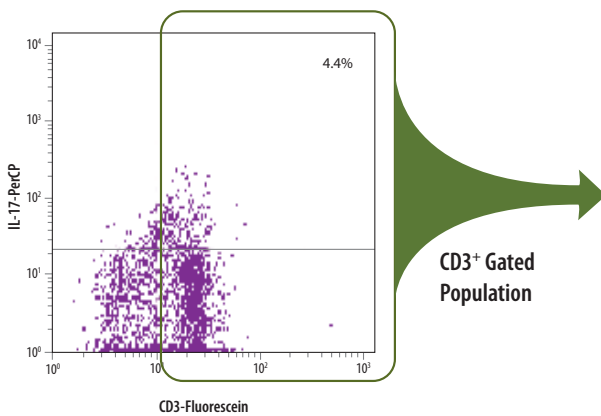
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Multi-Color Flow Cytometry Kits

Flow cytometry facilitates the multiparameter analysis of cell populations based on the expression of cell surface and/or intracellular markers. R&D Systems now offers Multi-Color Flow Cytometry Kits that allow researchers to assess multiple markers simultaneously. These kits contain up to four conjugated antibodies, corresponding isotype controls, and all the necessary buffers for optimized, single-step staining of embryonic stem cells, hematopoietic progenitor cells, multipotent mesenchymal stromal cells, and Th17 cells. The individual buffers for these kits are also available as separate items (see page 11).

Product	Species	Catalog #	Size
Embryonic Stem Cell Kit • SSEA-1-PerCP • SSEA-4-Fluorescein • Oct-3/4-APC • SOX2-PE	Human/Mouse	FMC001	25 Tests
Hematopoietic Progenitor Kit • CD48-PE • CD150-APC • CD244-Fluorescein	Mouse	FMC005	25 Tests
Multipotent Mesenchymal Stromal Cell Kit w/ CD105-PerCP • CD146-Fluorescein • CD90-APC • CD45-PE	Human	FMC002	25 Tests
Th17 Cell Kit • IL-17-PerCP • CD3-Fluorescein • IL-22-APC • IL-23 R-PE	Human	FMC007	25 Tests



Th17 Cells Assessed Using Multicolor Flow Cytometry. Activated human peripheral blood mononuclear cells (PBMCs) were stained using the Th17 Multicolor Flow Cytometry Kit (Catalog # FMC007). CD3⁺ Cells were then gated and simultaneously assessed for IL-17, IL-23 R, and IL-22.

