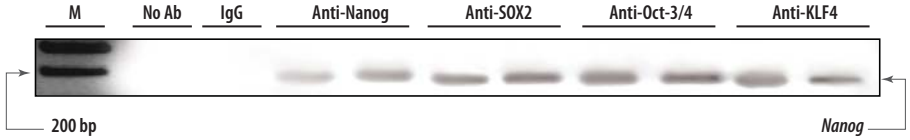
New Products September 2008

ExactaChIP™ Chromatin IP Kits

The chromatin immunoprecipitation (ChIP) assay has become one of the most useful techniques for the study of gene expression mechanisms and identification of gene regulatory networks. R&D Systems has developed a new line of assay kits for chromatin immunoprecipitation. The ExactaChIP Kits are designed to provide a simple and fast method to identify genomic DNA target sequences bound by specific transcription factors. Each kit includes an analyte-specific primary antibody that has been validated for chromatin immunoprecipitation and a positive control primer set for a known DNA sequence recognized by the transcription factor. Cross-linked transcription factor-DNA complexes are immunoprecipitated using the antibody provided in the kit. Following purification of the protein-bound DNA, gene-specific primers are used to detect transcription factor target genes by standard PCR. Using the ExactaChIP Kit, a researcher is able to assess other potential transcription factor binding sites in the DNA by employing PCR primers of their own design, while using the kit primers as a positive control to test the efficacy of the ChIP reaction.

For more details on the ExactaChIP Chromatin IP Kits, please visit our website at www.RnDSystems.com/go/ExactaChIP.



Detection of Nanog-, SOX2-, Oct-3/4-, and KLF4-binding to the *Nanog* Promoter by Chromatin Immunoprecipitation. Human BGO1V ES cells were fixed and lysed. Binding of Nanog, SOX2, Oct-3/4, and KLF4 to the *Nanog* promoter was assessed in duplicate samples using the corresponding ExactaChIP Chromatin IP Kit (Catalog # ECP1997, ECP2018, ECP1759, ECP3640, respectively). Cell lysates were incubated with the indicated biotinylated polyclonal antibodies (provided in their respective kits) or biotinylated anti-goat IgG control, followed by MagCellect™ Streptavidin Ferrofluid (Catalog # MAG999). The DNA was purified and the *Nanog* promoter was detected using standard PCR. M = DNA marker.

ExactaChIP Chromatin Immunoprecipitation Kits

ChIP Kit Antibody	Species	Catalog #	Size
c-Myc	Human	ECP3696	1 Kit
CREB	Human	ECP2989	1 Kit
FoxP3	Human	ECP3240	1 Kit
GATA-4	Human	ECP2606	1 Kit
GATA-5	Human	ECP2170	1 Kit
GATA-6	Human	ECP1700	1 Kit
GLI-1	Human	ECP3324	1 Kit
GLI-2	Human	ECP3526	1 Kit
HIF-1α	Human/Mouse	ECP1935	1 Kit
KLF4	Human	ECP3640	1 Kit
KLF4	Mouse	ECP3158	1 Kit
Nanog	Human	ECP1997	1 Kit
Oct-3/4	Human	ECP1759	1 Kit
p300	Human	ECP3789	1 Kit
SOX2	Human	ECP2018	1 Kit
STAT3	Human/Mouse	ECP1799	1 Kit
ExactaChIP Chromatin IP Buffer Panel		ECP001	1 Set

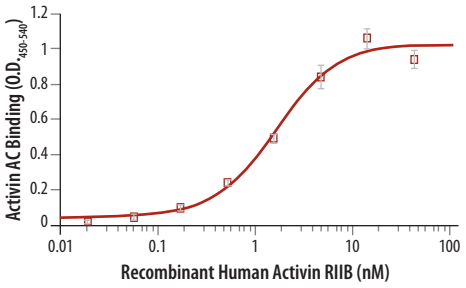
Contents

Activin AC Heterodimer

Activins and inhibins are TGF-β superfamily proteins regulating a variety of processes including mesoderm induction, reproductive system development and function, liver growth and regeneration, wound healing, and inflammation. There are four human inhibin β subunits (β_A, β_B, β_C, and β_E) and a single inhibin α subunit.[1] Activins are disulfide linked homodimers or heterodimers of β subunits, while inhibins contain the α subunit and β_A or β_B. Activin AC is a 23 kDa heterodimer of the β_A and β_C subunits.[2] The inhibin β propeptides are required for subunit folding, dimerization, and secretion.[3] Sequence identity between human, mouse, and rat is 100% for mature β_A and 91% - 93% for mature β_C.

The β_A and β_C subunits are co-expressed in the liver, pituitary, ovary, testis, and adrenal gland.[2,4] The β_C subunit dimerizes with β_A, β_B and β_E *in vitro*, and also dimerizes with the inhibin α subunit in several cell lines.[5,6] Overexpression of β_C results in increased production of Activin AC, as well as a reduction in both β_A expression and activin-induced signaling.[5,7] The β_C subunit modulates activin-induced effects in a variety of systems by forming intracellular dimers with the β_A subunit and impeding the release of Activins A (β_A-β_A), AB (β_A-β_B), and B (β_B-β_B).[5,8]

R&D Systems is now offering recombinant human Activin AC (Catalog # 4879-AC). Please visit our website at www.RnDSystems.com/go/TGFbeta for other products related to the TGF-β superfamily.



Activin AC binds Activin RIIB in a Dose-dependent Manner. Recombinant human Activin AC (Catalog # 4879-AC), mixed with increasing amounts of recombinant human Activin RIIB/Fc Chimera (Catalog # 339-RBB), was captured by anti-human Activin C monoclonal antibody (Catalog # MAB1629). Bound Activin RIIB was measured using biotinylated anti-human Activin RIIB polyclonal antibody (Catalog # BAF339) and streptavidin-HRP (Catalog # DY998).

References

1. Werner, S. & C. Alzheimer (2006) Cytokine Growth Factor Rev. **17**:157.
2. Mellor S.L. *et al.* (2000) J. Clin. Endocrinol. Metab. **85**:4851.
3. Gray, A.M. & A.J. Mason (1990) Science **247**:1328.
4. Gold, E.J. *et al.* (2004) Mol. Cell. Endocrinol. **222**:61.
5. Mellor, S.L. *et al.* (2003) Endocrinology **144**:4410.
6. Ushiro, Y. *et al.* (2006) J. Reprod. Dev. **52**:487.
7. Wada, W. *et al.* (2004) Am. J. Physiol. Endocrinol. Metab. **287**:E247.
8. Butler, C.M. *et al.* (2005) Cytokine Growth Factor Rev. **16**:377.

Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Activin AC	Human	CHO	4879-AC-010	10 µg
Amnionless	Human	NS0	1860-AM-050	50 µg
Angiopoietin-like 3	Human	CHO	4954-AN-050	50 µg
Apolipoprotein E3/ApoE3	Human	*E. coli*	4144-AE-500	500 µg
ASAHL	Mouse	NS0	4886-AH-010	10 µg
ASAM	Human	CHO	5019-AM-050	50 µg
Blk, Active	Human	*Sf* 9	2679-KS-010	10 µg
BMP-4	Mouse	CHO	5020-BP-010	10 µg
BMP-15/GDF-9B	Human	CHO	5096-BM-005	5 µg
VE-Cadherin, Fc Chimera	Mouse	NS0	1002-VC-050	50 µg
Carboxylesterase 1/CES1	Human	NS0	4920-CE-010	10 µg
CD1d1, Fc Chimera	Mouse	NS0	4884-CD-050	50 µg
CD38	Mouse	NS0	4947-AC-010	10 µg
CD99-L2, Fc Chimera	Mouse	NS0	5024-CD-050	50 µg
Cerberus 1	Mouse	*E. coli*	1986-CB-025	25 µg
CLEC-1	Human	NS0	1704-CL-050	50 µg
CLEC10A/CD301	Human	NS0	4888-CL-050	50 µg
CL-K1/COLEC11	Human	NS0	5025-CL-050	50 µg
Coagulation Factor XIV/Protein C, Active	Human	CHO	4998-SE-010	10 µg
Complement Component C3a	Human	*E. coli*	3677-C3-025	25 µg
Complement Factor H	Human	NS0	4779-FH-050	50 µg
COT, Active	Human	*Sf* 9	4586-KS-010	10 µg
Desmocollin-2	Human	NS0	4688-DC-050	50 µg
DLL1, Fc Chimera	Mouse	NS0	5026-DL-050	50 µg
EMR2	Human	CHO	4894-EM-050	50 µg
ENPP-7/Alk-SMase	Human	NS0	4924-EN-010	10 µg
ERK2, Active	Human	*E. coli*	1230-KS-010	10 µg
FAK, Active	Human	*Sf* 9	4467-KS-010	10 µg
FGF acidic	Mouse	*E. coli*	4686-FA-025	25 µg
FGF-8, a Isoform	Human	*E. coli*	4745-F8-050	50 µg
FGF-8, e Isoform	Human	*E. coli*	4746-F8-050	50 µg
FGF-8, f Isoform	Human	*E. coli*	5027-FF-025	25 µg
Follistatin	Human	CHO	4889-FN-025	25 µg
Follistatin-like 4	Human	CHO	4890-FN-050	50 µg
Fucosyltransferase 3/FUT3	Human	NS0	4950-GT-020	20 µg
Fucosyltransferase 5/FUT5	Human	NS0	4949-GT-020	20 µg
Glyoxalase I	Human	*E. coli*	4959-GL-02M	2.5 mg
HRP-2, Isoform 1	Human	NS0	4956-HD-050	50 µg
IFN-β	Human	CHO	11415-1	100,000 U
IGFBP-L1	Mouse	NS0	4130-BL-050	50 µg
IL-9 Rα	Rat	NS0	4896-RR-025	25 µg
IL-32γ	Human	*E. coli*	4690-IL-025/CF	25 µg
ITK, Active	Human	*Sf* 9	4587-KS-010	10 µg
Jagged 2, Fc Chimera	Human	CHO	1726-JG-050	50 µg
Jagged 2, Fc Chimera	Mouse	NS0	4748-JG-050	50 µg
KIR3DL1, Fc Chimera	Human	NS0	1225-KR-050	50 µg
Kirrel1	Mouse	NS0	5030-K1-050	50 µg

Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Kirrel3	Human	NS0	4910-K3-050	50 µg
LMIR2/CD300c, Fc Chimera	Human	NS0	3256-LM-050	50 µg
LRRTM3	Human	NS0	4898-LR-050	50 µg
Lyn, B Isoform, Active	Human	*Sf* 9	3206-KS-010	10 µg
Matriptase/ST14	Mouse	*E. coli*	4735-SE-010	10 µg
MCP-6	Mouse	NS0	3736-SE-010	10 µg
MEK2, Active	Human	*Sf* 9	2855-KS-010	10 µg
MKK4, Active	Human	*Sf* 9	3390-KS-010	10 µg
Nectin-2/CD112	Mouse	NS0	3869-N2-050	50 µg
Neprilysin/CD10	Human	CHO	1182-ZNC-010	10 µg
Neuraminidase	*C. perfringens*	*E. coli*	5080-NM-010	10 µg
Neuraminidase	*M. viridifaciens*	*E. coli*	5084-NM-010	10 µg
Neuraminidase (H1N1)	Influenza A Virus	*Sf* 21	4858-NM-005	5 µg
Neurexophilin-1	Human	NS0	4957-NX-050	50 µg
Neurexophilin-3	Rat	NS0	5098-NX-050	50 µg
PDK-1, Active	Human	*Sf* 9	864-KS-010	10 µg
PIM1, Active	Human	*Sf* 9	4588-KS-010	10 µg
PKA Cα, Active	Human	*Sf* 9	4268-KS-010	10 µg
PKA Cβ, Active	Human	*Sf* 9	4596-KS-010	10 µg
PKCδ, Active	Human	*Sf* 9	4585-KS-010	10 µg
Phospholipase A2 Group IB/PLA2G1B	Human	NS0	5018-PL-010	10 µg
Plexin B3	Human	NS0	4958-PC-050	50 µg
PLK1, Active	Human	*Sf* 9	3804-KS-010	10 µg
Progranulin	Mouse	NS0	2557-PG-050	50 µg
Prostasin/Prss8	Human	CHO	4599-SE-010	10 µg
Protein Disulfide Isomerase/P4HB	Human	CHO	4236-DI-050	50 µg
PRSS28	Mouse	NS0	4808-SE-010	10 µg
PSMA/FOLH1/NAALADase I	Mouse	CHO	4946-ZN-010	10 µg
PYK2/FAK2, Active	Human	*Sf* 9	4589-KS-010	10 µg
Reg IIIa	Mouse	NS0	3907-RG-050	50 µg
ROCK1, Active	Human	*Sf* 9	4590-KS-010	10 µg
RSK1, Active	Human	*Sf* 9	992-KS-010	10 µg
SCARA5	Human	NS0	4900-SR-050	50 µg
Serpin B8/Proteinase Inhibitor 8	Mouse	*Sf* 21	3588-PI-050	50 µg
Siglec-14, Fc Chimera	Human	NS0	4905-SL-050	50 µg
Sirtuin 2/SIRT2	Human	*Sf* 21	4358-DA-050	50 µg
SLAM/CD150	Mouse	NS0	4330-SL-050	50 µg
Src, Active	Human	*E. coli*	4595-KS-010	10 µg
SYK, Active	Human	*Sf* 9	4594-KS-010	10 µg
TEV Protease	Tobacco Etch Virus	*E. coli*	4469-TP-200	200 µg
Tryptase ε/BSSP-4	Human	NS0	5047-SE-010	10 µg
VSIG4, Fc Chimera	Mouse	NS0	4674-VS-050	50 µg
vWF-A2	Human	*E. coli*	2764-WF-050	50 µg

Fluorogenic Peptide Substrates

Product	Substrate	Catalog #	Size
H-Met-Gly-Pro-AMC Fluorogenic Substrate	Methionine Aminopeptidases	ES017	5 mg

Active Recombinant Protein Kinases

Cellular protein kinases comprise a class of enzymes responsible for the phosphorylation of specific serine, threonine, or tyrosine residues within a protein. There are about 520 different kinases in the human genome, and kinase activity is involved in essentially every intracellular signaling pathway. Because the malfunctioning of kinases, by altered expression or mutation, has been linked to specific diseases, biomedical research is devoting substantial efforts to attempt to regulate their activities. The inhibition of kinases can be achieved by developing antibodies that block their functions or by designing and screening small molecule inhibitors. Using radiometric, chemiluminescent, or fluorescence detection assays, the requirement for full-length, active kinases plays a significant role in the discovery phase of kinase inhibitors. In these assays, the kinases need to be homogeneous, specific for a desired protein substrate, and of high specific activity.

R&D Systems has recently added several new active recombinant human protein kinases to its list of recombinant and natural proteins, and now offers more than 35 purified and validated kinases. These include key enzymes regulating such important cellular pathways as those defined by Akt and ERK1/2. The new recombinant protein kinases that are now available are listed below. Please visit our website at *www.RnDSystems.com/go/IntracellularKinases* for a complete listing of all the intracellular kinase products that we offer.

New Active Recombinant Human Kinases

	Catalog #
Blk	2679-KS
COT	4586-KS
ERK2	1230-KS
FAK	4467-KS
ITK	4587-KS
Lyn B	3206-KS
MEK2	2855-KS
MKK4	3390-KS
PDK-1	864-KS
PIM1	4588-KS
PKA Cα	4268-KS
PKA Cβ	4596-KS
PKCδ	4585-KS
PLK1	3804-KS
PYK2/FAK2	4589-KS
ROCK1	4590-KS
RSK1	992-KS
Src	4595-KS
SYK	4594-KS

See adjacent table for pack size.

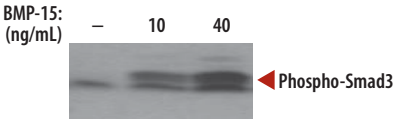
Bone Morphogenetic Protein-15

BMP-15, also known as GDF-9B, is a TGF-β superfamily ligand that is expressed by oocytes throughout folliculogenesis. It exerts multiple effects on ovarian granulosa cells (GC) and is instrumental in promoting GC support of oocyte development. Premature ovarian failure and infertility in sheep and humans are associated with mutations in BMP-15.

BMP-15 promotes GC proliferation independently of follicle stimulating hormone (FSH). At the same time, BMP-15 limits the GC response to FSH by blocking the FSH-induced expression of the FSH receptor and the production of progesterone.[1] BMP-15 promotes metabolic support for the oocyte by inducing cumulus cells to synthesize and release glycolytic products and cholesterol.[2,3] BMP-15 down-regulates its own availability by inducing GC to produce stem cell factor which subsequently inhibits BMP-15 production by oocytes.[4]

BMP-15 phosphorylation is required for its bioactivity.[5] Phosphorylated BMP-15 interacts with BMPR-IB/ALK6 and BMPR-II, and nonphosphorylated BMP-15 functions as a competitive antagonist to BMPR-IB.[5,6] Ligation of BMP receptor complexes results in activation of SMAD signal transduction and the transcription of BMP-15 responsive genes.[5] BMP-15 forms 34 kDa noncovalently-linked homodimers and 37 kDa heterodimers with GDF-9.[7] Although heterodimerization with GDF-9 may limit the secretion of active BMP-15, these two factors promote oocyte survival and folliculogenesis in a synergistic manner.[2,7,8]

R&D Systems is now offering recombinant human BMP-15/GDF-9B (Catalog # 5096-BM). Please visit our website at www.RnDSystems.com/go/TGFbeta for other BMP-related products.



BMP-15 Induces Smad3 Phosphorylation. Cell lysates from mouse P19 teratocarcinoma cells, untreated (-) or treated with the indicated amounts of recombinant human BMP-15 (Catalog #5096-BM), were immunoblotted with anti-human phospho-Smad3 (S423/S425) polyclonal antibody (Catalog # AB3226).

References

1. Otsuka, F. *et al.* (2000) J. Biol. Chem. **275**:39523.
2. Sugiura, K. *et al.* (2007) Development **134**:2593.
3. Su, Y-Q. *et al.* (2008) Development **135**:111.
4. Otsuka, F. & S. Shimasaki (2002) Proc. Natl. Acad. Sci. USA **99**:8060.
5. McMahon, H.E. *et al.* (2008) Endocrinology **149**:812.
6. Moore, R.K. *et al.* (2003) J. Biol. Chem. **278**:304.
7. Liao, W.X. *et al.* (2003) J. Biol. Chem. **278**:3713.
8. Yan, C. *et al.* (2001) Mol. Endocrinol. **15**:854.

Polyclonal Antibodies

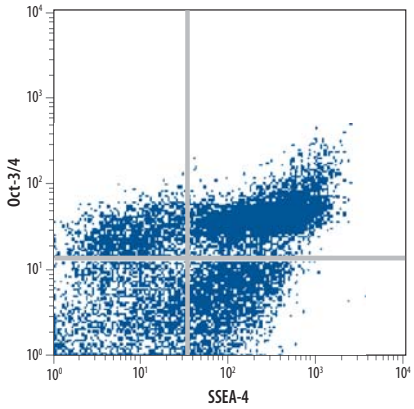
Antibody	Species	Type	Catalog #	Size
5T4	Human	Sheep IgG	AF4975	100 µg
5T4	Mouse	Sheep IgG	AF5049	100 µg
ADAM19	Human	Sheep IgG	AF5050	100 µg
ADAM22	Human	Sheep IgG	AF4908	100 µg
ADAM23	Human	Sheep IgG	AF4974	100 µg
AP-2γ	Human	Goat IgG	AF5059	100 µg
Apolipoprotein H/ApoH	Human	Goat IgG	AF5087	100 µg
Arylsulfatase G/ARSG	Mouse	Sheep IgG	AF4600	100 µg
BCAP	Human/Mouse	Goat IgG	AF4857	100 µg
BLNK	Human	Goat IgG	AF4966	100 µg

Continued on page 5.

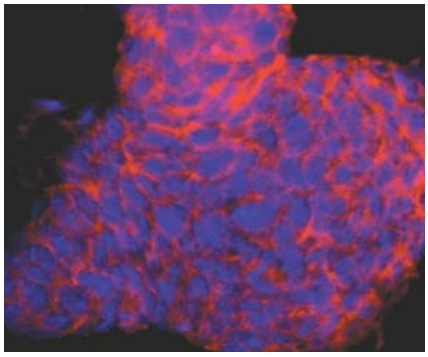
Antibodies to Pluripotent Stem Cell Markers

A variety of different molecular markers have been used to characterize pluripotent stem cell and progenitor populations at early stages of differentiation. For many of these markers, the timing of their expression and unique expression patterns provide useful tools for scientists to initially identify and isolate various stem/progenitor cells.

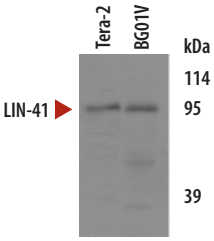
To assist pluripotent stem cell-related research, R&D Systems has developed new antibodies to human and mouse Oct-3/4, and 5T4, as well as human Cripto-1, LIN-28, LIN-41, and c-Myc.



Detection of Oct-3/4 and SSEA-4 in BG01V Embryonic Stem Cells by Flow Cytometry. Human BG01V embryonic stem cells were stained using APC-conjugated anti-human/mouse Oct-3/4 monoclonal antibody (Catalog # IC1759A) and CFS-conjugated anti-human/mouse SSEA-4 monoclonal antibody (Catalog# FAB1435F).



Detection of 5T4 in Differentiated Mouse D3 Embryonic Stem Cells. Mouse D3 embryonic stem cells grown in the presence of serum, without LIF or a fibroblast feeder cell layer, were stained using anti-mouse 5T4 polyclonal antibody (Catalog # AF5049) followed by NorthernLights™ 557-conjugated anti-sheep secondary antibody (Catalog# NL010; red). Nuclei were counterstained with DAPI (blue).



Detection of LIN-41 in Human BG01V Cells. Cell lysates from human NTera-2 teratocarcinoma cells and BG01V embryonic stem cells were immunoblotted for LIN-41 using the anti-human LIN-41 polyclonal antibody (Catalog # AF5104).

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
BSRP-C	Mouse	Sheep IgG	AF4989	100 µg
Butyrophilin	Mouse	Sheep IgG	AF4765	100 µg
Butyrophilin 2	Mouse	Sheep IgG	AF4917	100 µg
BVES	Human	Sheep IgG	AF4986	100 µg
CD39/ENTPD1	Mouse	Sheep IgG	AF4398	100 µg
CD157	Human	Sheep IgG	AF4736	100 µg
Cited-2	Human/Mouse	Sheep IgG	AF5005	100 µg
CLEC14A	Human	Sheep IgG	AF4968	100 µg
Coagulation Factor XIV/ Protein C	Mouse	Sheep IgG	AF4885	100 µg
COCO	Human	Goat IgG	AF3047	100 µg
Complement Factor H	Human	Goat IgG	AF4779	100 µg
CRACC/SLAMF7	Mouse	Sheep IgG	AF4628	100 µg
CRF21	Human	Sheep IgG	AF5086	100 µg
CRISP-4	Mouse	Sheep IgG	AF5017	100 µg
CrkL	Human/Mouse	Goat IgG	AF5127	100 µg
Cytohesin-1	Human	Goat IgG	AF4807	100 µg
β-Defensin 3	Human	Goat IgG	AF4435	100 µg
Desmocollin-2	Human	Sheep IgG	AF4688	100 µg
Desmocollin-3	Human	Sheep IgG	AF4630	100 µg
Dopa Decarboxylase/DDC	Human/Rat/Bovine/ Canine/Guinea Pig/Rabbit/ Sheep	Sheep IgG	PPS065	100 µL
Dopamine β-Hydroxylase, C-Terminus	Human/Mouse/Primate	Sheep IgG	PPS066	100 µL
Dopamine β-Hydroxylase, N-Terminus	Human/Primate	Sheep IgG	PPS067	100 µL
Dopamine Transporter, C-Terminus	Human/Mouse/Primate	Rabbit IgG	PPS068	100 µL
Dopamine Transporter, Extracellular Loop 2	Human/Primate	Rabbit IgG	PPS069	100 µL
E2F-1	Human	Sheep IgG	AF4825	100 µg
ECM-1	Mouse	Goat IgG	AF4428	100 µg
FoxC2	Human	Sheep IgG	AF5044	100 µg
FoxF1	Human/Mouse	Goat IgG	AF4798	100 µg
FRA-1	Human	Goat IgG	AF4935	100 µg
$GABA_A$ R δ, N-Terminus	Mouse/Rat	Rabbit IgG	PPS090	100 µL
Phospho-$GABA_B$ R2 (S892)	Human/Mouse/Rat/ Bovine/Canine/Chicken/ Primate/*Xenopus*/Zebrafish	Rabbit IgG	PPS073	100 µL
GPR56	Human	Sheep IgG	AF4634	100 µg
Phospho-IFN-α/β R1 (S535/S539)	Human/Mouse/Rat/ Bovine/Canine/Primate/ Sheep	Rabbit IgG	PPS074	100 µL
Phospho-IκBα (S32/S36)	Human	Rabbit IgG	AF4809	100 µg
IL-20 Rβ	Mouse	Sheep IgG	AF4388	100 µg
IL-33, Propeptide	Mouse	Sheep IgG	AF5010	100 µg
IQGAP1	Human	Sheep IgG	AF5069	100 µg
IQGAP2	Human	Sheep IgG	AF5068	100 µg
IRF8	Human	Sheep IgG	AF5117	100 µg
Phospho-Jak1 (Y1022/Y1023)	Human	Rabbit IgG	AF4510	100 µg

Continued on page 6.

Notch Ligands

Jagged 2 and Delta-like protein 1 (DLL1) are type I transmembrane proteins and members of the Delta-Serrate-Lag-2 (DSL) family of Notch ligands. Both Jagged 2 and DLL1 regulate cell fate determination during development.[1-4] Jagged 2 is most highly expressed in fetal thymus, epidermis, foregut, dorsal root ganglia, and the inner ear.[2] In two week old mice, the Jagged 2 transcript is most abundant in heart, lung, thymus, skeletal muscle, brain, and testis.[2] Functionally, Jagged 2 activates the Notch-1 pathway of signal transduction,[2] and is involved in the development of the mammalian limb, branchial arches, central and peripheral nervous system, as well as γδ T cell lineage differentiation and the establishment of functional natural killer cell lines.[3-5]

DLL1 is widely expressed and plays an important role in embryonic somite formation, cochlear hair cell differentiation, and B and T lymphocyte differentiation.[6-11] A 60 kDa fragment of DLL1, released by ADAM9-, 12-, or 17-mediated proteolysis, promotes proliferation of hematopoietic progenitor cells.[12-13] Recently, it was also demonstrated that the upregulation of DLL1 in arterial endothelial cells, following injury or angiogenic stimulation, is central to postnatal arteriogenesis.[14] In addition, DLL1 has been shown to be overexpressed in cervical carcinoma and glioma.[15]

R&D Systems now offers recombinant human Jagged 2 (Catalog # 1726-JG) and recombinant mouse DLL1 (Catalog # 5026-DL). Please see page 2 for details about these products, or visit our website at www.RnDSystems.com/go/DSLNotch for other Notch-related products.

References

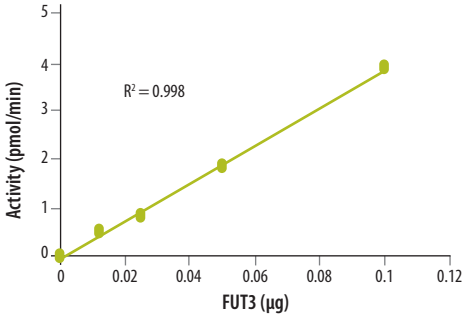
1. Shawber, C. *et al.* (1996) Dev. Biol. **180**:370.
2. Luo, B. *et al.* (1997) Mol. Cell. Biol. **17**:6057.
3. Valsecchi, V. *et al.* (1997) Mech. Dev. **60**:302.
4. DeHart, S. *et al.* (2005) Blood **105**:3521.
5. de La Coste, A. & A.A. Freitas (2006) Immunol. Lett. **102**:1.
6. Takahashi, Y. *et al.* (2003) Development **130**:4259.
7. Teppnar, I. *et al.* (2007) BMC Dev. Biol. **7**:68.
8. Kiernan, A.E. *et al.* (2005) Development **132**:4353.
9. Schmitt, T.M. & J.C. Zuniga-Pflucker (2002) Immunity **17**:749.
10. Hozumi, K. *et al.* (2004) Nat. Immunol. **5**:638.
11. Santos, M.A. *et al.* (2007) Proc. Natl. Acad. Sci. USA **104**:15454.
12. Dyczynska, E. *et al.* (2007) J. Biol. Chem. **282**:436.
13. Karanu, F.N. *et al.* (2001) Blood **97**:1960.
14. Limbourg, A. *et al.* (2007) Circ. Res. **100**:363.
15. Purow, B.W. *et al.* (2005) Cancer Res. **65**:2353.

Human Fucosyltransferases

Glycoconjugates are frequently fucosylated at terminal sites. Fucose is often found to be essential for sugar epitope and lectin ligand generation. Well-known fucose-containing glycans include Lewis structures and ABO blood group antigens. Lewis structures are key elements involved in leukocyte homing and extravasation, and thus are essential for lymphocyte maturation and natural defense functions. Fucose-containing glycans also play essential roles in cell signaling and development.

More than ten human fucosyltransferases have been cloned to date.[1] FUT1 and FUT2 are α1-2 fucosyltransferases which are responsible for ABO blood group antigen synthesis. FUT3, FUT4, FUT5, FUT6, FUT7, and FUT9 are α1-3/4 fucosyltransferases that are responsible for Lewis antigen generation. FUT3, also known as Lewis blood group fucosyltransferase, is distinguished from other members of the group by having both strong α1-3 and α1-4 fucosyltransferase activity.[2] FUT5 and FUT6 are highly homologous to FUT3 due to gene duplication. FUT7 is exclusively responsible for the biosynthesis of sialyl Lewis X epitopes on leukocytes and high endothelial venule cells.[3] FUT8 is an α1-6 fucosyltransferase that adds a fucose to the chitobiose core of N-glycans.[4] All known fucosyltransferases are predicted to be type II transmembrane proteins and are mainly localized to the Golgi apparatus.

R&D Systems now offers recombinant human Fucosyltransferase 3 (Catalog # 4950-GT) and Fucosyltransferase 5 (Catalog # 4949-GT) that correspond to the luminal domains. Please visit our website at www.RnDSystems.com/go/Glycoenzymes for a complete listing of glycobiology-related products.



Determination of the Activity of Recombinant Human Fucosyltransferase 3. The activity of recombinant human Fucosyltransferase 3 (FUT3; Catalog # 4950-GT) was determined by its ability to transfer fucose from GDP-fucose to lacto-N-tetraose. Serial dilutions of FUT3 were incubated with GDP-fucose spiked with GDP-^{3}H fucose, and the acceptor lacto-N-tetraose for 10 minutes. The products were separated on a DEAE sepharose column. Product calculations were based on applied and incorporated radioactivity counts.

References

1. Becker, D.J. *et al.* (2003) Glycobiology **13**:41R.
2. Kukowska-Latallo, J.F. *et al.* (1990) Genes Dev. **4**:1288.
3. Blander, J. M. *et al.* (1999) J. Immunol. **163**:3746.
4. Lee, S.H. *et al.* (2006) J. Biochem. **139**:391.

Polyclonal Antibodies

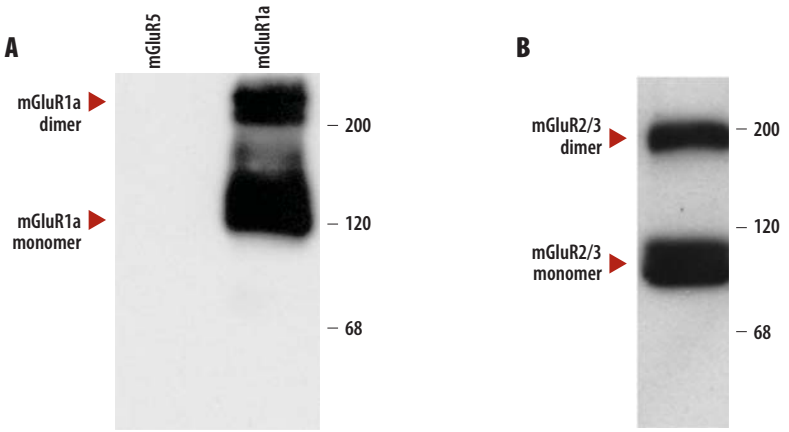
Antibody	Species	Type	Catalog #	Size
Continued from page 5.				
LIN-41	Human	Sheep IgG	AF5104	100 µg
LRPAP	Human	Goat IgG	AF4296	100 µg
LRRC4	Human	Sheep IgG	AF4995	100 µg
LRRN1/NLRR-1	Human	Sheep IgG	AF4990	100 µg
MAGP-1	Mouse	Goat IgG	AF4977	100 µg
MCEMP1	Human	Sheep IgG	AF4994	100 µg
MDGA1	Human	Sheep IgG	AF5055	100 µg
Phospho-MEK1 (T386)	Human/Mouse/Rat/ Bovine/Canine/Chicken/ Primate/*Xenopus*	Rabbit IgG	PPS076	100 µL
Phospho-MEK1 (T292)	Human/Mouse/Rat/ Bovine/Canine/Primate	Rabbit IgG	PPS075	100 µL
mGluR1a, C-Terminus	Rat	Rabbit IgG	PPS077	100 µL
mGluR1a/5	Human/Mouse/Rat	Rabbit IgG	PPS079	100 µL
mGluR2/3	Rat	Rabbit IgG	PPS078	100 µL
mGluR3	Human	Sheep IgG	AF4668	100 µg
Phospho-MKK3 (S218/T222)/ MKK6 (S207/T211)	Human	Rabbit IgG	AF4930	250 µg

Continued on page 7.

Metabotropic Glutamate Receptors

L-glutamate is the primary excitatory amino acid in the mammalian nervous system. It binds to two classes of receptors: ionotropic glutamate receptors (iGluRs), and metabotropic glutamate receptors (mGluRs). iGluRs are ion channels, and include the NMDA, AMPA, and KA receptors. mGluRs are G-protein coupled receptors that form three groups. Group I receptors (mGluR1 and 5) couple to phospholipase C. Group II receptors (mGluR2 and 3) and group III receptors (mGluR4, 6, 7, and 8) both inhibit adenyl cyclase, and differ only in their artificial agonists and overall sequence homology. On neurons, group I receptors are postsynaptic, group III receptors are presynaptic, and group II receptors are both pre- and postsynaptic. Presynaptic localization strongly suggests a regulatory role in neurotransmitter release.

R&D Systems is now offering four new anti-human, mouse, or rat affinity purified polyclonal antibodies to metabotropic glutamate receptors (mGluRs), and an anti-human monoclonal antibody to mGluR5. See the product table above or page 8 for details about these products.



Detection of Metabotopic Glutamate Receptors by Western Blot. (**A**) Lysates from human HEK 293 embryonic kidney cells expressing both mGluR5 and mGluR1a were immunoblotted using anti-rat mGluR1a polyclonal antibody (Catalog # PPS077). The antibody is specific for the 125 kDa monomer and 250 kDa dimer of mGluR1a. (**B**) Lysates from rat hippocampal cells were immunoblotted with anti-rat mGluR2/3 polyclonal antibody (Catalog # PPS078). The antibody recognizes both the 110 kDa monomer and the 220 kDa dimer of mGluR2 and mGluR3.

Polyclonal Antibodies

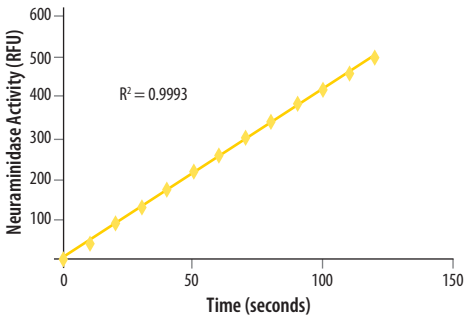
Antibody	Species	Type	Catalog #	Size
Phospho-MSP R/Ron (Y1238/Y1239)	Human	Rabbit IgG	AF1947	100 µg
MST1/STK4	Human	Goat IgG	AF4939	100 µg
MSX1	Human/Mouse	Goat IgG	AF5045	100 µg
Phospho-Nbs1 (S343)	Human	Rabbit IgG	AF4944	100 µg
NCOA3	Human/Mouse	Goat IgG	AF5076	100 µg
Nephrin	Mouse	Goat IgG	AF3159	100 µg
Neurogenin-3	Human	Sheep IgG	AF3444	100 µg
Ninjurin-1	Human	Sheep IgG	AF5105	100 µg
NRARP	Human/Mouse	Goat IgG	AF4814	100 µg
Parvalbumin α	Human/Mouse/Rat	Sheep IgG	AF5058	100 µg
Peptidase Inhibitor 16/PI16	Human	Goat IgG	AF4980	100 µg
Peptidase Inhibitor 16/PI16	Mouse	Goat IgG	AF4929	100 µg
PGD2 Synthase/PTGDS	Rat	Goat IgG	AF5000	100 µg
PKC β2	Human/Mouse	Sheep IgG	AF4378	100 µg
PKC ι/λ/ζ	Human/Mouse/Rat	Sheep IgG	AF4465	100 µg
Prolyl Oligopeptidase/PREP	Human	Goat IgG	AF4308	100 µg
Rad50	Human	Goat IgG	AF4996	100 µg
Ras-GAP	Human/Mouse/Rat	Goat IgG	AF5094	100 µg
RBP4	Mouse	Sheep IgG	AF3476	100 µg
RelA-p65	Human	Sheep IgG	AF5078	100 µg
RIG-I	Human	Goat IgG	AF4859	100 µg
S100A6	Human/Mouse	Sheep IgG	AF4584	100 µg
S100A2	Human	Goat IgG	AF4870	100 µg
SCARA5	Mouse	Sheep IgG	AF4754	100 µg
Serpin I1	Mouse	Goat IgG	AF5054	100 µg
SMAGP	Human	Goat IgG	AF3959	100 µg
SOCS-5	Human	Goat IgG	AF4796	100 µg
SPRED1	Human	Sheep IgG	AF5067	100 µg
SPRY4	Human	Sheep IgG	AF5070	100 µg
Phospho-STAT3 (Y705)	Human	Rabbit IgG	AF4607	100 µg
Phospho-Synaptotagmin (S309)	Human/Mouse/Rat/ Bovine/Canine/Chicken/ Primate/Zebrafish	Rabbit IgG	PPS085	100 µL
Phospho-Synaptotagmin (T202)	Human/Mouse/Rat/ Bovine/Canine/Chicken/ Primate/Zebrafish	Rabbit IgG	PPS086	100 µL
Phospho-Synuclein-α (S129)	Human/Mouse/Rat/ Bovine/Canine/Primate	Rabbit IgG	PPS091	100 µL
T Cell Receptor α Chain: V α24-Jα Q	Human/Mouse/Rat	Sheep IgG	AF4988	100 µg
TFF3	Human	Sheep IgG	AF4407	100 µg
Thrombomodulin/CD141	Human	Sheep IgG	AF3947	100 µg
THSD1	Mouse	Sheep IgG	AF4784	100 µg
TSC1	Human/Mouse/Rat	Sheep IgG	AF4379	100 µg
VAMP-1	Human/Mouse	Goat IgG	AF4828	100 µg
Vesicular Monoamine Transporter 2/VMAT2, C-Terminus	Human/Rat/Primate	Rabbit IgG	PPS089	100 µL

Influenza Viral and Bacterial Neuraminidases

Widely distributed in animal tissues, sialic acid is usually capped on glycoproteins and glycolipids. Sialic acid acts as a receptor for a variety of lectins, and is involved in cell adhesion, migration, and recognition.[1,2] Neuraminidases, or sialidases, remove sialic acid from glycoconjugates. Many viruses and bacteria take advantage of the interaction between sialic acid and neuraminidases, and implicate these enzymes in the pathogenesis of various diseases. The predominant sialic acid in humans is N-acetylneuraminic acid (Neu5Ac), which also acts as a receptor for influenza virus.[2]

Influenza viral neuraminidase (NA) is a major membrane glycoprotein found on the viral surface. It specifically cleaves terminal sialic acid on the surface of host cells and newly assembled viral particles. This helps progeny viruses to leave the host cell and prevents self aggregation.[3] Nine serological subtypes of influenza NA are known, each of which contains a globular head, a thin stalk region, and a small hydrophobic region that anchors the protein in the viral membrane.[4] In comparison, bacterial neuraminidases are usually secreted. Bacterial neuraminidases with preferences for differentially linked sialic acids are commonly used as tools for characterizing glycan structure and the biological functions of glycoconjugates.

R&D Systems now offers recombinant Neuraminidases from Micromonospora viridifaciens *(Catalog # 5084-NM),* Clostridium perfringens *(Catalog # 5080-NM) and Influenza A Virus H1N1 (Catalog # 4858-NM).* *Please see page 3 for details.*



Measurement of Recombinant Influenza A Viral H1N1 Neuraminidase Activity. The activity of recombinant Influenza A Virus H1N1 Neuraminidase (Catalog # 4858-NM) was measured by its ability to cleave the fluorogenic substrate 2′-(4-methylumbelliferyl)-α-D-N-acetylneuraminic to 4-Methylumbelliferone. Fluorescence was determined using excitation and emission wavelengths of 365 nm and 445 nm, respectively.

References

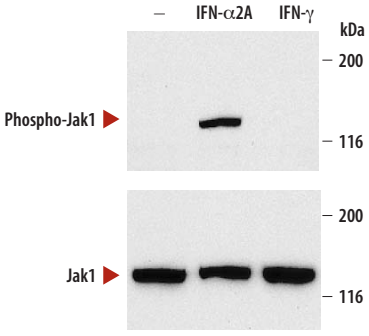
1. Angata, T. & A. Varki (2002) Chem. Rev. **102**: 439.
2. Varki, N.M. & A. Varki (2007) Lab. Invest. **87**: 851.
3. Palese, P. & R.W. Compans (1976) J. Gen. Virol. **33**:159.
4. Colman, P.M. *et al.* (1983) Nature **303**: 41.

Phospho-specific Antibodies

Reversible protein phosphorylation due to the activity of kinases and phosphatases is a key post-translational modification that can change the activity or location of target proteins. Enzymes that mediate phosphorylation are involved in virtually every aspect of cell biology, and their dysregulation is often associated with disease states. Therefore kinases and phosphatases are viewed as potential drug targets. Since phosphorylation states are indicative of kinase and phosphatase activity, monitoring specific phosphorylation events in cells and tissues is used to evaluate the effectiveness of growth factors, therapeutics, and immunomodulators.

New Phospho-specific Antibodies

Analyte	Phosphorylation Site	Catalog #
$GABA_B$ R2	(S892)	PPS073
IFN-α/β R1	(S535/S539)	PPS074
IκB-α	(S32/S36)	AF4809
Jak1	(Y1022/Y1023)	AF4510
MEK1	(T386)	PPS076
MEK1	(T292)	PPS075
MKK3/MKK6	(S218/T222)/ (S207/T211)	AF4930
MSP R/Ron	(Y1238/Y1239)	AF1947
Nbs1	(S343)	AF4944
p53	(S15)	IC1839P
STAT3	(Y705)	AF4607
Synaptotagmin	(S309)	PPS085
Synaptotagmin	(T202)	PPS086
Synuclein α	(S129)	PPS091



Detection of Phosphorylated Jak1 (Y1022/1023) by Western Blot. Human Burkitt's lymphoma Daudi cells were untreated (-), treated with recombinant human IFN-α2A (Catalog # 11100-1), or with recombinant human IFN-γ (Catalog # 285-IF) for 15 minutes. Cell lysates were immunoblotted using anti-human phospho-Jak1 (Y1022/Y1023) polyclonal antibody (Catalog # AF4510). An identical membrane was probed using total anti-human Jak1 antibody.

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
ADRA1B	Human	471802	MAB4730	100 µg
Aminopeptidase P1/XPNPEP1	Human	409124	MAB29701	100 µg
APLP-2	Human	397718	MAB4945	100 µg
Betacellulin	Mouse	197417	MAB10251	500 µg
c-Jun	Human/Mouse	320831	MAB2670	100 µg
Carboxypeptidase B1	Human	438806	MAB2897	100 µg
β-Catenin	Human/Mouse/Rat	196624	MAB13292	100 µg
CCL28	Mouse	134315	MAB5331	500 µg
CD63	Human	460305	MAB5048	100 µg
CD229/SLAMF3	Mouse	312830	MAB2555	100 µg
CEACAM-5/CD66e	Human	487618	MAB4128	100 µg
CEACAM-5/CD66e	Human	487609	MAB41281	100 µg
Cytosol Nonspecific Dipeptidase (CNDP2)/CPGL	Human	464702	MAB3560	100 µg
Coagulation Factor VII	Human	321605	MAB23381	100 µg
Complement Component C1rLP	Human	393608	MAB3676	100 µg
Complement Factor H-related 1/CFHR1	Human	442127	MAB4247	100 µg
DDR2	Human	290804	MAB25381	100 µg
EGF	Rat	420610	MAB3214	500 µg
Epimorphin/Syntaxin 2	Mouse	338930	MAB2568	100 µg
FCRLB/FCRY	Mouse	465905	MAB4868	100 µg
Histamine H1 R	Human	480054	MAB4726	100 µg
HLA-DR	Human	L203	MAB4869	100 µg
IL-1β/IL-1F2	Mouse	B122	MAB4012	100 µg
IL-17 RC	Human	309822	MAB22691	100 µg
IL-17F	Human	197301	MAB13351	100 µg
Integrin β4/CD104	Mouse	308601	MAB4054	100 µg
LMTK2	Human	465222	MAB5147	100 µg
LOX-1/SR-E1	Human	331219	MAB17981	500 µg
MCPT-1	Mouse	285008	MAB5146	100 µg
mGluR5	Human	464823	MAB45141	100 µg
Myeloperoxidase	Human/Mouse	392105	MAB3174	100 µg
Nephrin	Human	451202	MAB42691	100 µg
Pentraxin 3/TSG-14	Human	247911	MAB1826	500 µg
PINK1	Human	420920	MAB4357	100 µg
PKC β2	Human/Mouse	469832	MAB4378	100 µg
PKC ι/λ	Human/Mouse	450401	MAB4465	100 µg
PLC-γ1	Human/Mouse/Rat	479819	MAB32881	100 µg
Progranulin	Mouse	333731	MAB25571	100 µg
Proprotein Convertase 9	Human	410420	MAB38881	100 µg
Reg IA	Human	431202	MAB4937	100 µg
Renin	Mouse	434703	MAB42771	100 µg
Rictor	Human	454313	MAB4598	100 µg
ROBO4	Mouse	274940	MAB5004	100 µg
TAFA5/FAM19A5	Human	463102	MAB5148	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
S100A11	Mouse	493804	MAB5167	100 µg
TAFA1/FAM19A1	Human	492821	MAB5154	100 µg
TBX2	Human	393725	MAB5040	100 µg
TBX2	Human	393720	MAB50401	100 µg
TCF-3	Human	401705	MAB4406	100 µg
Testican 3/SPOCK3	Mouse	330403	MAB2346	500 µg
TSPAN8	Human	458811	MAB4734	100 µg

Labeled Antibodies

Fluorochrome-labeled Antibodies

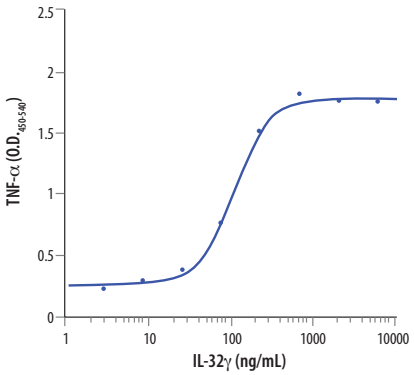
Antibody	Species	Label	Catalog #	Size
AGTR-2	Human	Phycoerythrin	FAB3659P	100 Tests
AMICA/JAML	Human	Allophycocyanin	FAB34491A	100 Tests
AMICA/JAML	Human	Fluorescein	FAB34491F	100 Tests
AMICA/JAML	Human	Phycoerythrin	FAB34491P	100 Tests
B7-H3	Human	Fluorescein	FAB1027F	100 Tests
B7-H3	Human	Phycoerythrin	FAB1027P	100 Tests
BLAME/SLAMF8	Human	Fluorescein	FAB19072F	100 Tests
BLAME/SLAMF8	Human	Phycoerythrin	FAB19072P	100 Tests
BMI-1	Human	Allophycocyanin	IC33341A	100 Tests
BMI-1	Human	Fluorescein	IC33341F	100 Tests
BMI-1	Human	Phycoerythrin	IC33341P	100 Tests
C1q R1/CD93	Human	Allophycocyanin	FAB23791A	100 Tests
C1q R1/CD93	Human	Fluorescein	FAB23791F	100 Tests
N-Cadherin	Human	Fluorescein	FAB1388F	100 Tests
N-Cadherin	Human	Phycoerythrin	FAB1388P	100 Tests
CCR7	Mouse	Allophycocyanin	FAB3477A	100 Tests
CCR7	Mouse	Phycoerythrin	FAB3477P	100 Tests
CD19	Human	Allophycocyanin	FAB4867A	100 Tests
CD19	Human	Fluorescein	FAB4867F	100 Tests
CD19	Human	Phycoerythrin	FAB4867P	100 Tests
CD36/SR-B3	Human	Allophycocyanin	FAB19551A	100 Tests
CD36/SR-B3	Human	Fluorescein	FAB19551F	100 Tests
CD36/SR-B3	Human	Phycoerythrin	FAB19551P	100 Tests
CD44	Human	Allophycocyanin	FAB4948A	100 Tests
CD44	Human	Phycoerythrin	FAB5088P	100 Tests
CD69	Human	Allophycocyanin	FAB23591A	100 Tests
CD69	Human	Fluorescein	FAB23591F	100 Tests
CD69	Human	Phycoerythrin	FAB23591P	100 Tests
CD69	Mouse	Allophycocyanin	FAB2386A	100 Tests
CD69	Mouse	Fluorescein	FAB2386F	100 Tests
CD69	Mouse	Phycoerythrin	FAB2386P	100 Tests
CD81	Mouse	Fluorescein	FAB4865F	100 Tests
CD81	Mouse	Phycoerythrin	FAB4865P	100 Tests

Continued on page 10.

IL-32γ

Interleukin-32γ (IL-32γ), also known as natural killer cells transcript 4 (NK4) and TNF-α-inducing factor, is a 27 kDa secreted glycoprotein. The IL-32γ isoform represents the standard IL-32 protein which has five other potential alternate splice variants including IL-32α, β, δ, ε, and ζ.[1] IL-32 is produced by activated T lymphocytes, natural killer cells, and epithelial cells.[2,3] In addition, it has been shown to be produced by human monocytes and macrophages in response to bacterial stimulation.[4] IL-32γ has the ability to induce pro-inflammatory cytokines such as TNF-α, CXCL8/IL-8, and MIP-2 through the activation of typical cytokine signaling pathways involving NF-κB and p38.[5] Reduction of IL-32 in primary human blood monocytes by siRNA causes a significant decrease in the levels of IFN-γ, TNF, and IL-6.[6] In addition, IL-32 is involved in activation-induced T cell death,[1] and promotes the caspase-1-dependent production of IL-1β following stimulation of intracellular NOD receptors.[2] IL-32 is highly expressed in a number of disease states including the synovial tissue of rheumatoid arthritis and colon epithelial tissue in Crohn's disease.[7-8]

R&D Systems is now offering recombinant human IL-32γ (Catalog # 4690-IL). Please see page 2 for details on this product.



IL-32γ Induces TNF-α Production in Mouse Raw264.7 Cells. Mouse Raw264.7 macrophage cells were treated with increasing concentrations of recombinant human IL-32γ (Catalog # 4690-IL) under serum free conditions in the presence of 10 µg/mL of Polymyxin B. The concentration of TNF-α was measured 24 hrs later using the mouse TNF-α/TNFSF1A Quantikine® ELISA Kit (Catalog # MTA00).

References

1. Goda, C. *et al.* (2006) Int. Immunol. **18**:233.
2. Netea, M.G. *et al.* (2005) Proc. Natl. Acad. Sci. USA **102**:16309.
3. Conti, P. *et al.* (2007) Autoimmun. Rev. **6**:131.
4. Netea, M. *et al.* (2006) PLoS Med. **3**:1310.
5. Kim, S-H. *et al.* (2005) Immunity **22**:131.
6. Nold, M.F. *et al.* (2008) J. Immunol. **180**:557.
7. Dinarello, C.A. & S-H. Kim (2006) Ann. Rheum. Dis. **65**(Suppl III):iii61.
8. Joosten, L.A. *et al.* (2006) Proc. Natl. Acad. Sci. USA **103**:3298.

Fluorochrome-labeled SLAM Antibodies

The SLAM (Signaling lymphocyte-activation molecule) family of integral membrane proteins is a collection of six Ig superfamily molecules that play important roles in hematopoiesis and leukocyte function.[1-3] Currently, SLAM family proteins are considered leukocyte-lineage molecules. Select SLAMs (CD244, NTBA, CD84, CD229) have been identified on mature granulocytes and NK cells, where, through predominately homophilic interactions, they are presumed to both positively and negatively regulate multiple functions.[2-4] Other SLAMs (CD150, Ly108) have also been reported on early, or immature, lymphocyte-lineage cells, where they are hypothesized to induce the development of innate-functioning lymphocytes.[5]

Two recent papers suggest that SLAMs may prove to be reliable markers for discrete hematopoietic developmental stages.[6,7] The first paper examined mouse long term hematopoietic stem cells (HSCs) and identified both $CD150^+$ (previously reported) and $CD150^-$ (newly reported) fractions.[6] Notably, the $CD150^-$ fraction appears to show diminished reconstitution potential but elevated proliferative activity. A second paper examined the early transition from HSC to multipotent progenitor in both human and mouse.[7] Significantly, the data suggest that SLAM family expression changes with maturity, and that SLAM family expression in mouse may not be recapitulated in human. The results are summarized in the table below.

R&D Systems is now offering nine new fluorochrome-conjugated anti-mouse or anti-human antibodies to SLAM family members. Please visit our website at www.RnDSystems.com/go/SLAM for a complete product listing.

	HSC ($CD34^+$ $CD38^-$)	Multipotent Progenitor ($CD34^+$ $CD38^+$)
CD84/SLAMF5	+/+	+/+
CD229/SLAMF3	+/–	+/–
CD150/SLAM	+/–	–/–
CD244/2B4	–/+	+/+/–
CD48/SLAMF2*	–/+	+/+/–

*ligand for CD244

+ : > 90% Positive, +/– : 60-75% Positive, Red : Mouse, Blue : Human

References

1. Ma, C.S. *et al.* (2007) Annu. Rev. Immunol. **25**:337.
2. Claus, M. *et al.* (2008) Front. Biosci. **13**:956.
3. Veillette, A. *et al.* (2006) Nat. Immunol. **6**:56.
4. Romero, X. *et al.* (2005) J. Immunol. **174**:7033.
5. Veillette, A. *et al.* (2007) Immunity **27**:698.
6. Weksberg, D.C. *et al.* (2008) Blood **111**:2444.
7. Sintes, J. *et al.* (2008) Exp. Hematol. May 19. [Epub ahead of print].

Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Label	Catalog #	Size
Continued from page 9.				
CD84/SLAMF5	Human	Fluorescein	FAB1855F	100 Tests
CD97	Human	Allophycocyanin	FAB2529A	100 Tests
CD97	Human	Phycoerythrin	FAB2529P	100 Tests
CD99	Human	Fluorescein	FAB3968F	100 Tests
CD155/PVR	Human	Fluorescein	FAB25301F	100 Tests
CD155/PVR	Human	Phycoerythrin	FAB25301P	100 Tests
CD200	Human	Allophycocyanin	FAB27241A	100 Tests
CD200	Human	Fluorescein	FAB27241F	100 Tests
CD200	Human	Phycoerythrin	FAB27241P	100 Tests
CD229/SLAMF3	Mouse	Allophycocyanin	FAB2555A	100 Tests
CD229/SLAMF3	Mouse	Fluorescein	FAB2555F	100 Tests
CD229/SLAMF3	Mouse	Phycoerythrin	FAB2555P	100 Tests
Cripto	Human	Allophycocyanin	FAB2772A	100 Tests
Cripto	Human	Fluorescein	FAB2772F	100 Tests
CTLA-4	Human	Phycoerythrin	FAB386P	100 Tests
EGF R/ErbB1	Human	Allophycocyanin	FAB10951A	100 Tests
EGF R/ErbB1	Human	Fluorescein	FAB10951F	100 Tests
EGF R/ErbB1	Human	Phycoerythrin	FAB10951P	100 Tests
EphB4	Human	Fluorescein	FAB3038F	100 Tests
EphB4	Human	Phycoerythrin	FAB3038P	100 Tests
ESAM	Human	Allophycocyanin	FAB4204A	100 Tests
ESAM	Human	Fluorescein	FAB4204F	100 Tests
ESAM	Human	Phycoerythrin	FAB4204P	100 Tests
FATP1	Human	Phycoerythrin	IC3304P	100 Tests
FATP4	Human	Allophycocyanin	FAB3650A	100 Tests
FATP4	Human	Phycoerythrin	FAB3650P	100 Tests
Fcγ RI/CD64	Mouse	Allophycocyanin	FAB20741A	100 Tests
Fcγ RI/CD64	Mouse	Phycoerythrin	FAB20741P	100 Tests
Glut1	Human	Allophycocyanin	FAB1418A	100 Tests
Glut1	Human	Fluorescein	FAB1418F	100 Tests
Glut1	Human	Phycoerythrin	FAB1418P	100 Tests
gp130	Mouse	Allophycocyanin	FAB4681A	100 Tests
gp130	Mouse	Phycoerythrin	FAB4681P	100 Tests
HGF R/c-MET	Human	Allophycocyanin	FAB3582A	100 Tests
HGF R/c-MET	Human	Fluorescein	FAB3582F	100 Tests
HGF R/c-MET	Human	Phycoerythrin	FAB3582P	100 Tests
HIF-1α	Human	Allophycocyanin	IC1935A	100 Tests
HIF-1α	Human	Fluorescein	IC1935F	100 Tests
HIF-1α	Human	Phycoerythrin	IC1935P	100 Tests
HLA-DR	Human	Fluorescein	FAB4869F	100 Tests
HLA-DR	Human	Phycoerythrin	FAB4869P	100 Tests
IGF-II R	Human	Fluorescein	FAB2447F	100 Tests
IL-17 R	Mouse	Allophycocyanin	FAB448A	100 Tests
IL-17 R	Mouse	Phycoerythrin	FAB448P	100 Tests
IL-17 RC	Mouse	Allophycocyanin	FAB2270A	100 Tests

Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Label	Catalog #	Size
IL-17B R	Mouse	Phycoerythrin	FAB1040P	100 Tests
IL-17F	Human	Allophycocyanin	IC13351A	100 Tests
IL-17F	Human	Phycoerythrin	IC13351P	100 Tests
IL-17F	Mouse	Fluorescein	IC2057F	100 Tests
IL-17F	Mouse	Phycoerythrin	IC2057P	100 Tests
IL-21	Mouse	Allophycocyanin	IC594A	100 Tests
IL-21	Mouse	Phycoerythrin	IC594P	100 Tests
IL-22 R	Human	Allophycocyanin	FAB2770A	100 Tests
IL-22 R	Human	Phycoerythrin	FAB2770P	100 Tests
IL-23 R	Human	Allophycocyanin	FAB14001A	100 Tests
IL-31 RA	Human	Allophycocyanin	FAB2769A	100 Tests
IL-31 RA	Human	Fluorescein	FAB2769F	100 Tests
IL-31 RA	Human	Phycoerythrin	FAB2769P	100 Tests
Integrin α7	Mouse	Allophycocyanin	FAB3518A	100 Tests
Integrin α7	Mouse	Fluorescein	FAB3518F	100 Tests
Integrin α7	Mouse	Phycoerythrin	FAB3518P	100 Tests
LAIR2	Human	Fluorescein	IC2665F	100 Tests
Mesothelin	Human	Fluorescein	FAB32652F	100 Tests
Mesothelin	Human	Phycoerythrin	FAB32652P	100 Tests
Oct-3/4	Human/Mouse	Allophycocyanin	IC1759A	100 Tests
OX40/TNFRSF4	Human	Fluorescein	FAB3388F	100 Tests
OX40/TNFRSF4	Human	Phycoerythrin	FAB3388P	100 Tests
p53	Human	Phycoerythrin	IC1839P	100 Tests
PD-L2	Human	Allophycocyanin	FAB1224A	100 Tests
PD-L2	Human	Phycoerythrin	FAB1224P	100 Tests
Podocalyxin	Mouse	Phycoerythrin	FAB1556P	100 Tests
Podocan	Human	Allophycocyanin	FAB4220A	100 Tests
Podocan	Human	Phycoerythrin	FAB4220P	100 Tests
SLAM/CD150	Mouse	Allophycocyanin	FAB4330A	100 Tests
SLAM/CD150	Mouse	Fluorescein	FAB4330F	100 Tests
SLAM/CD150	Mouse	Phycoerythrin	FAB4330P	100 Tests
STAT5a	Human	Fluorescein	IC21741F	100 Tests
STRO-1	Human	Fluorescein	FAB1038F	100 Tests
TLR1	Human	Allophycocyanin	FAB1484A	100 Tests

Cultrex® Basement Membrane Extracts (BME)

The PathClear designation means that in addition to standard sterility, endotoxin and MAP testing, the BME is tested by PCR and is clear of 31 pathogens including LDEV.

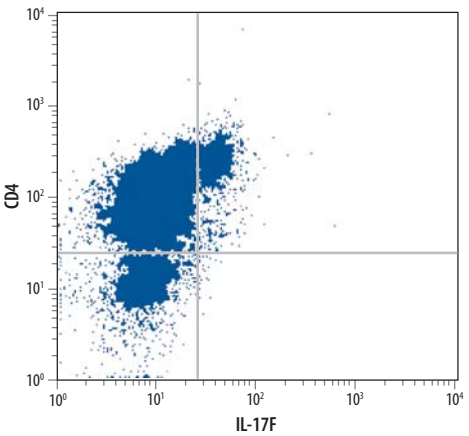
Product	Catalog #	Size
Cultrex PathClear™ BME - Phenol Red	3430-005-02	5 mL
Cultrex PathClear™ BME - Phenol Red (2 x 5 mL)	3430-010-02	10 mL
Cultrex PathClear™ BME	3432-005-02	5 mL
Cultrex PathClear™ BME (2 x 5 mL)	3432-010-02	10 mL

Th17 Cells

Th17 cells are the latest distinct lineage of T helper cells. These cells function in the immune response to some infectious agents and in several autoimmune diseases.[1-4] Naïve mouse T cells differentiate into Th17 cells in response to the synergistic effects of TGF-β and IL-6. Th17 differentiation in humans is less clear and seems to require IL-1 or IL-23. STAT3 is essential for the transcriptional regulation of the Th17 gene expression program, and RORγt functions as the master regulator of Th17 lineage differentiation. IL-17A and IL-17F are the hallmark cytokines produced by this subset, and they signal via the broadly expressed IL-17RA and IL-17RC receptors. The expression of IL-21, IL-22, and CCR6 further characterize the Th17 subset.

The physiological role of Th17 cells and effector cytokines was first elucidated by the demonstration that IL-23 plays a critical role in several disease models. IL-23 produced by antigen-presenting cells promotes proliferation of, and cytokine production by, memory Th17 cells. Cytokines produced by Th17 cells have a pathological role in several autoimmune inflammatory diseases including arthritis, psoriasis, inflammatory bowel disease, and multiple sclerosis. Th17 effector cytokines were also shown to be involved in the regulation of granulopoiesis and control of several extracellular bacterial infections.

R&D Systems is now offering several new labeled antibodies useful for the characterization of Th17 differentiation and Th17 signaling pathways. Please see the product table on this page and page 10 for details, or visit our website at www.RnDSystems.com/go/Th17 for a complete listing of Th17-related products.



Detection of $CD4^+/IL\text{-}17F^+$ Human Peripheral Blood Mononuclear Cells by Flow Cytometry. Peripheral blood mononuclear cells, activated with PMA/Ca^{2+} ionomycin were stained using APC-conjugated anti-human CD4 monoclonal antibody (Catalog # FAB3791A) and PE-conjugated anti-human IL-17F monoclonal antibody (Catalog # IC13351P).

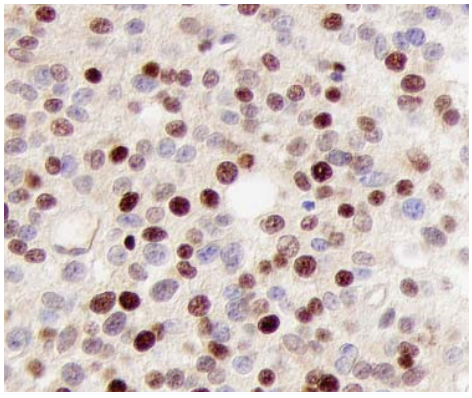
References

1. Ouyang, W. *et al.* (2008) Immunity **28**:454.
2. Dong, C. (2008) Nat. Rev. Immunol. **8**:337.
3. McGeachy, M. & D. Cua (2008) Immunity **28**:445.
4. McGeachy, M. & D. Cua (2007) Semin. Immunol. **19**:372.

p27/Kip1 IHC Detection Kit

p27/Kip1 acts as a negative regulator of the cell cycle by binding to and inhibiting cyclin/Cdk complexes.[1-3] Recognized as a tumor suppressor protein, p27/Kip1 can serve as a reliable cytological marker of tumor growth in different types of human tissue. Reduced levels of p27/Kip1 correlate with a poor prognosis in a wide spectrum of human tumors and can accelerate tumorigenesis in mouse tissues. In particular, the down-regulation of p27/Kip1 is suggested to be one of the main mechanisms underlying the development and progression of prostate cancer.

R&D Systems is now offering a complete kit for immunohistochemical (IHC) detection of p27/Kip1 in human tissues. This kit was developed in collaboration with Dr. Andrew Koff of Memorial Sloan-Kettering Cancer Center. Dr. Koff is one of the scientists who isolated and cloned the p27/Kip1 gene and engineered mice lacking the p27/Kip1.[4] The p27/Kip1 IHC Kit includes a highly specific (as confirmed by western blotting) rat anti-human p27/Kip1 monoclonal antibody, a biotinylated anti-rat secondary antibody, antigen-retrieval reagents, and other components required for chromogenic detection of the p27/Kip1 protein in cryostat or paraffin-embedded sections of formalin-fixed human tissues. The primary antibody provided with the kit also detects the orthologous mouse p27/Kip1 protein, which makes this kit a valuable IHC tool for studying p27/Kip1 regulation in mouse models as well.



Immunohistochemical detection of p27/Kip1 in Human Prostate Cancer Tissue. p27/Kip1 was detected in formalin-fixed, paraffin-embedded human prostate cancer tissue sections using the Human p27/Kip1 IHC Kit (Catalog # CTS2256). Tissues were stained with anti-human p27/Kip1 monoclonal antibody and biotinylated anti-rat secondary antibody. p27/Kip1 was visualized using Streptavidin-HRP and DAB Chromogen substrate (all provided in the kit; brown). Tissues were counterstained with hematoxylin (blue).

References

1. Koff, A. (2006) Cancer Cell **9**:75.
2. Galea, C.A. *et al.* (2008) Biochemistry **47**:7598.
3. Abukhdeir, A.M. & B.H. Park (2008) Expert Rev. Mol. Med. **10**:e19.
4. Cordon-Cardo, C. *et al.* (1998) J. Natl. Cancer Inst. **90**:1284.

Labeled Antibodies

Biotinylated Antibodies

Antibody	Species	Type	Catalog #	Size
ADAMTS4	Human	Goat IgG	BAF4307	50 µg
Aminopeptidase LRAP/ERAP2	Human	Goat IgG	BAF3830	50 µg
ASAHL	Human	Goat IgG	BAF4494	50 µg
BAMBI/NMA	Mouse	Goat IgG	BAF2387	50 µg
CD21	Human	Sheep IgG	BAF4909	50 µg
CD39/ENTPD1	Mouse	Sheep IgG	BAF4398	50 µg
CD48/SLAMF2	Human	Goat IgG	BAF3644	50 µg
CDO	Human	Sheep IgG	BAF4384	50 µg
Desmin	Human	Goat IgG	BAF3844	50 µg
DNAM-1	Mouse	Sheep IgG	BAF4436	50 µg
Glypican 1	Human	Goat IgG	BAF4519	50 µg
HGF R/c-MET	Canine	Goat IgG	BAF4140	50 µg
Histone Deacetylase 8	Human/Mouse	Sheep IgG	BAF4359	50 µg
IL-12/IL-23 p40	Canine	Goat IgG	BAF1969	50 µg
IL-23 p19	Mouse	Goat IgG	BAF1619	50 µg
Integrin β1/CD29	Mouse	Goat IgG	BAF2405	50 µg
LIN-28	Human	Goat IgG	BAF3757	50 µg
MAGP-2	Human	Sheep IgG	BAF4914	50 µg
c-Myc	Human	Goat IgG	BAF3696	50 µg
Neurexin 1β/NXRN1b	Rat	Sheep IgG	BAF4524	50 µg
Opticin	Human	Goat IgG	BAF3148	50 µg
Osteoactivin/GPNMB	Mouse	Goat IgG	BAF2330	50 µg
PLUNC	Mouse	Sheep IgG	BAF4274	50 µg
Ryk	Human	Sheep IgG	BAF4907	50 µg
S100A6	Human/Mouse	Sheep IgG	BAF4584	50 µg
S100A7	Human	Sheep IgG	BAF4475	50 µg
S100A8	Human	Sheep IgG	BAF4570	50 µg
Sirtuin 2/SIRT2	Human	Sheep IgG	BAF4358	50 µg
VSIG1	Human	Sheep IgG	BAF4818	50 µg
VSIG3	Human/Mouse	Sheep IgG	BAF4915	50 µg

Flow Cytometry Kits

Fluorokine Kits use a labeled ligand combined with flow cytometry to assess the expression of cell surface receptors.

Labeled Ligand	Species	Catalog #	Size
EGF	Human	NFEG0	1 Kit
FGF basic	Human	NFFB0	1 Kit

Cell & Tissue Staining Kits

Product	Species	Catalog #	Size
p27/Kip1 IHC Detection Kit	Human	CTS2256	50 Tests

ELISA/Assay Kits

Analyte	Species	Sensitivity	Range	Catalog #	Size
CD163	Human	0.613 ng/mL	1.56-100 ng/mL	DC1630	1 Kit
Chemerin	Mouse	3.47 pg/mL	46.9-3000 pg/mL	MCHM00	1 Kit
Chitinase 3-like 1	Human	8.15 pg/mL	62.5-4000 pg/mL	DC3L10	1 Kit
CX3CL1/Fractalkine	Human	0.072 ng/mL	0.156-10 ng/mL	DCX310	1 Kit
Endocan	Mouse	21.3 pg/mL	46.9-3000 pg/mL	MEND00	1 Kit
EPCR	Human	0.282 ng/mL	0.625-40 ng/mL	DEPCR0	1 Kit
IGFBP-3	Mouse	16 pg/mL	78.1-5000 pg/mL	MGB300	1 Kit
IL-33	Mouse	14.3 pg/mL	31.3-2000 pg/mL	M3300	1 Kit
Testosterone	Multi-species	0.041 ng/mL	0.041-10 ng/mL	KGE010	1 Kit
TFPI	Human	10 pg/mL	31.2-2000 pg/mL	DTFP10	1 Kit

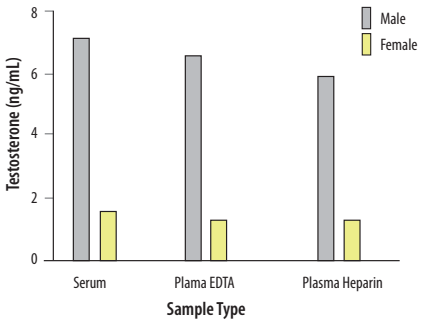
Parameter™ Testosterone Assay Kit

Testosterone is a sex steroid hormone primarily produced by testicular Leydig cells.[1] Two metabolites of this androgen are dihydrotestosterone (DHT) and estradiol. Testosterone is traditionally identified with spermatogenesis in the seminiferous tubules, and the development and maintenance of primary and secondary sex characteristics.[2] However, it is also implicated in immunosuppression,[3] bone density,[4] vasodilation,[5] prostate cancer,[6] diabetes,[7] and synaptic plasticity.[8] As with other steroid hormones, testosterone production is regulated by pituitary peptide hormones, which induce testosterone synthesis via cAMP-dependent cholesterol metabolism.[2,9] In adult human males, approximately 5 mg of testosterone is synthesized daily and released in a diurnal pattern, with serum and salivary levels peaking in the morning.[10,11] Most circulating testosterone is bound to proteins, such as sex hormone binding globulin (SHBG) or albumin. Free testosterone and albumin-bound testosterone are considered bioactive.[12]

R&D Systems now offers a Testosterone Parameter Assay Kit to measure testosterone in cell culture supernates, serum, and plasma. In this competitive enzyme immunoassay, testosterone present in a sample competes with a fixed amount of horseradish peroxidase (HRP)-labeled testosterone. After excess conjugate and unbound sample are washed away, a substrate solution is added to the wells to determine the activity of the bound enzyme. The intensity of the color is inversely proportional to the concentration of testosterone in the sample.

References

1. Haider, S.G. (2004) Int. Rev. Cytol. **233**:181.
2. Jones, R.E. (1996) Human Reproductive Biology. 2nd Ed. San Diego: Academic Press.
3. Bouman, A. *et al.* (2005) Hum. Reprod. Update **11**:411.
4. Isidori, A.M. *et al.* (2005) J. Endocrinol. Invest. **28**:73.
5. Reckelhoff, J.F. *et al.* (2005) Am. J. Physiol. Renal Physiol. **289**:F941.
6. Taplin, M.E. (2007) Nat. Clin. Pract. Oncol. **4**:236.
7. Ding, E.L. *et al.* (2006) JAMA **295**:1288.
8. Mukai, H. *et al.* (2006) Neuroscience **138**:757.
9. Vasta, V. *et al.* (2006) Proc. Natl. Acad. Sci. USA **103**:19925.
10. Dabbs, J.M., Jr. (1990) Physiol. Behav. **48**:83.
11. Diver, M.J. *et al.* (2003) Clin. Endocrinol. (Oxf). **58**:710.
12. Wheeler, M.J. (1995) Ann. Clin. Biochem. **32**:345.



Testosterone Levels in Serum and Plasma from Males and Females. The mean levels of testosterone in male (gray bars) and female (yellow bars) serum or plasma samples collected using EDTA or heparin as an anticoagulant were analyzed using the Testosterone Parameter Assay Kit (Catalog # KGE010). For each sample type, N=20 for females, N=14 for males.

Please visit our website at www.RnDSystems.com/go/ParameterKits for more information on this, or other available Parameter Assay Kits

Proteome Purify™ 2 Serum Protein Immunodepletion Resin

The removal of high-abundance proteins is an essential first step in effective proteome analysis, and immunodepletion is widely regarded as the most effective means to achieve this removal.[1-3] R&D Systems Proteome Purify 2 Human (Catalog # IDR002) and Mouse (Catalog # MIDR002) Serum Protein Immunodepletion Resins provide easy-to-use, high capacity systems to reproducibly remove albumin and IgG from human or mouse serum or plasma. These two proteins represent approximately 60% of the protein contained in serum and plasma. If they are not depleted, the relative concentration of these high-abundance proteins may mask the presence of other proteins with similar isoelectric points and/or molecular weights in two-dimensional electrophoresis (2DE) analysis. Of the many potential advantages to removing high-abundance proteins prior to 2DE or other types of proteomic analysis, two are especially important. First, removal allows visualization of proteins that co-migrate or co-purify with the high abundance proteins. Second, removal of high-abundance proteins in the sample allows one to increase the protein load or concentration, improving visualization or analysis.

It is likely that all proteins, whether they are secreted or normally present in the cytoplasm, organelles, cytoskeleton, or membrane, are present in the plasma in some amount.[4] Estimates indicate that more than 1000 discrete proteins are present and detectable in plasma if the most abundant proteins are depleted and a sensitive method of detection is employed.[1,4] Antibody-mediated depletion exhibits greater reproducibility and ease of preparation in comparison to other methods.[2,5] These factors are especially critical when evaluating low-abundance proteins as potential disease markers.

For more information on these products, please visit our website at www.RnDSystems.com/go/ProteomePurify

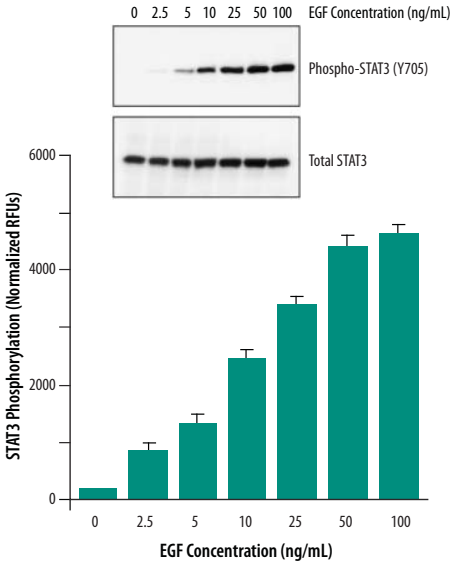
References

1. Omenn, G.S. *et al.* (2005) Proteomics **5**:3226.
2. Whiteaker, J.R. *et al.* (2007) J. Proteome Res. **6**:828.
3. Zolotarjova, N. *et al.* (2005) Proteomics **5**:3304.
4. Anderson, N.L. *et al.* (2004) Mol. Cell. Proteomics **3**:311.
5. Liu, T. *et al.* (2006) Mol. Cell. Proteomics **5**:2167.

Cell-Based ELISA Kits

Although *in vitro* biochemical assays are routinely used for hypothesis testing and drug discovery and screening, they cannot replicate the intracellular environment. Analyzing target proteins within intact cells may more accurately represent the status of specific signaling networks. R&D Systems Cell-Based ELISAs are unique two-color immunoenzymatic assays that permit the simultaneous detection of two targets in the same microplate well without the need for lysate preparation. Kits come in two formats: phospho-protein kits contain antibodies to measure both phosphorylated and total protein, while total protein kits contain antibodies to the protein of interest and a second housekeeping protein. Both formats allow for the normalization of well-to-well variability by ratiometric analysis of two wavelengths derived within the same microplate well. This approach results in precise analysis of the target protein, generating good reproducibility without the need for specialized equipment. A standard fluorescence plate reader is the only instrument needed to perform the assays.

R&D Systems continues to add to the Cell-Based ELISA product line by introducing kits designed to accurately measure the phosphorylation of STAT2 (Y689), STAT3 (Y705), STAT4 (Y693), and HSP27 (S78/S82). Please visit our website at www.RnDSystems.com/go/CellBasedELISA for a complete listing of available Cell-Based ELISAs.



EGF-induced STAT3 Phosphorylation on Y705 in Human Epidermoid Carcinoma Cells. Human A431 epidermoid carcinoma cells were treated with the indicated concentrations of recombinant human EGF (Catalog # 236-EG). Phosphorylation of STAT3 on Y705 was determined using the human/mouse phospho-STAT3 (Y705) Cell-Based ELISA (Catalog # KCB4607) and normalized to total STAT3 in the same wells (histogram). Detection of STAT3 phosphorylation on Y705 by Western blot is shown for comparison (inset).

ELISA & Activity Assay Development Kits

DuoSet® ELISA Development Systems

Analyte	Species	Catalog #	*Reagents for
Betacellulin	Mouse	DY1025	15 Plates
P-Cadherin	Mouse	DY761	15 Plates
CD48/SLAMF2	Mouse	DY3327	15 Plates
C-Reactive Protein/CRP	Human	DY1707	15 Plates
EDAR	Mouse	DY745	15 Plates
IL-10	Equine	DY1605	15 Plates
IL-12/IL-23 p40	Canine	DY1969	15 Plates
Marapsin/Pancreasin	Human	DY1988	15 Plates
MBL	Human	DY2307	15 Plates
NOV/CCN3	Human	DY1640	15 Plates
Stanniocalcin 1	Human	DY2958	15 Plates
TIMP-3	Human	DY973	15 Plates
uPA	Human	DY1310	15 Plates
VEGF R1/Flt-1	Human	DY321	15 Plates

**Also available in 45 plate Economy Packs.*

DuoSet IC (Intracellular) ELISAs & Activity Assays

Analyte	Species	Catalog #	Reagents for
Phospho-GSK-3α (S21)	Human	DYC4125-2	2 Plates*
Phospho-Lyn (Y397)	Human	DYC3936-2	2 Plates*
SHP-2, Phosphatase Activity Assay	Human/Mouse/Rat	DYC2809	1 Plate
Total VE-Cadherin	Human	DYC938-2	2 Plates*

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

Cell-Based ELISAs

Analyte	Species	Catalog #	Size
Phospho-HSP27 (S78/S82)	Human/Mouse	KCB2314	1 Kit
Phospho-STAT2 (Y689)	Human	KCB2890	1 Kit
Phospho-STAT3 (Y705)	Human/Mouse	KCB4607	1 Kit
Phospho-STAT4 (Y693)	Human	KCB4319	1 Kit

PlusCellect™ Cell Selection & Detection Kits

Analyte	Species	Catalog #	Size
CD44	Human	PLS4948	1 Kit
EGF R/ErbB1	Human	PLS1095	1 Kit
ErbB2/HER2	Human	PLS1129	1 Kit
HGF R/c-MET	Human	PLS358	1 Kit
Nectin-4	Human	PLS2659	1 Kit

Dual Color ELISpot Kits

Analytes	Species	Catalog #	Size
IFN-γ/IL-2	Mouse	ELD5006	1 Kit

Proteome Purify™

Product	Species	Catalog #	Size
Proteome Purify 2 Human Serum Protein Immunodepletion Resin	Human	IDR002-020	20 Tests
	Human	IDR002-040	40 Tests
Proteome Purify 2 Mouse Serum Protein Immunodepletion Resin	Mouse	MIDR002-020	20 Tests
	Mouse	MIDR002-040	40 Tests

Surveyor™ IC (Intracellular) ELISAs

Analyte	Species	Catalog #	Size
Total β-Catenin	Human	SUV1329	1 Kit
Phospho-HSP27 (S78/S82)	Human/Mouse/Rat	SUV2314	1 Kit

Fluorokine® MAP Pre-mixed Multiplex Kits

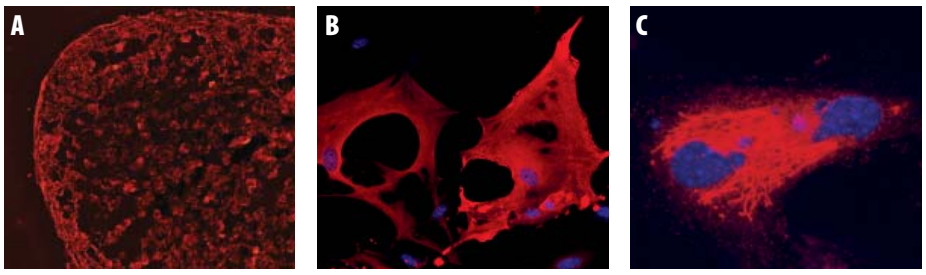
Analyte	Species	Catalog #	Size
TIMP-1, -2, -3, -4	Human	LKT003	1 Kit

Stem Cell Kits

Product	Species	Catalog #	Size
Neural Toxicity Assay Kit	Mouse	SC014	1 Kit
Mesenchymal Stem Cell Functional Identification Kit	Mouse	SC010	1 Kit

Mouse Mesenchymal Stem Cell Functional Identification Kit

Stem cells are defined by their ability to self renew and differentiate into multiple cell types. These cells, including bone marrow-derived stem cells (BMSCs) and mesenchymal stem cells (MSCs), have been discovered in various adult tissues. Cell selection technologies and recombinant growth factors have made it possible to isolate and expand stem cells *in vitro*. In this process, it is necessary to be able to determine the status of the isolated cells which is best done by measuring their abilities to differentiate. Our Mouse Mesenchymal Stem Cell Functional Identification Kit (Catalog # SC010) is designed to identify mouse BMSCs/MSCs based on their ability to differentiate into multiple mesenchymal lineages. This kit contains specially formulated media supplements which can be used to effectively differentiate BMSCs/MSCs into adipogenic, chondrogenic, or osteogenic lineages. A panel of antibodies, consisting of goat anti-mouse FABP4, sheep anti-mouse Collagen II, and goat anti-mouse Osteopontin are also included to assess the mature phenotypes.

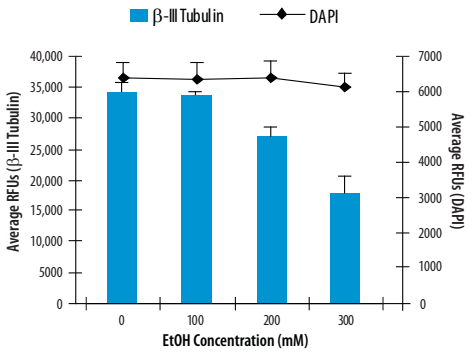


Differentiation of Mouse Mesenchymal Stem Cells (MSCs). The Mouse Mesenchymal Stem Cell Functional Identification Kit (Catalog # SC010) was used to differentiate MSCs into chondrogenic (**A**), adipogenic (**B**), and osteogenic (**C**) lineages. Phenotypes were assessed using antibodies supplied with the kit (red) including, anti-Collagen II (**A**), anti-FABP4 (**B**), or anti-Osteopontin (**C**). The nuclei in B and C were also counterstained with DAPI (blue).

Neural Toxicity Assay Kit

The ability of neural precursors to self renew and differentiate into neurons *in vitro* makes it possible to test how different bioactive agents influence these processes. Identification of modulators of neural precursor cell proliferation and differentiation can provide insight into nervous system development and potential treatments for disease states. R&D Systems is now offering a Neural Toxicity Assay Kit (Catalog # SC014) that is designed to serve as a screening tool to identify toxins or other bioactive agents that affect neural progenitor cell proliferation and differentiation. This kit contains specially formulated media supplements for the maintenance and differentiation of neural precursor cells, Resazurin to monitor proliferation, and an HRP-conjugated mouse anti-neuron-specific β-III Tubulin antibody to monitor neural stem cell differentiation. Reagents provided in the kit are sufficient for two 96-well plate proliferation assays and two 96-well plate differentiation assays.

For more information on this kit, or our other available Neural Stem Cell Kits, please visit our website at www.RnDSystems.com/go/NSCKits



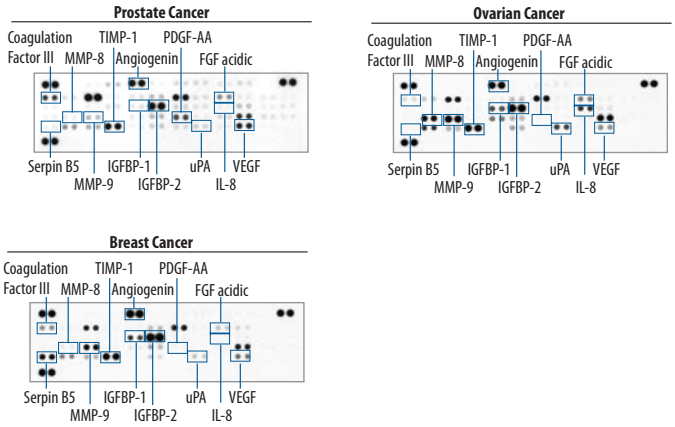
The Effect of Ethanol on Neuronal Differentiation. The Neural Toxicity Assay Kit (Catalog # SC014) was used to measure the effect of ethanol (EtOH) on neuronal differentiation. Rat cortical stem cells (Catalog # NSC001) were differentiated in the presence of the indicated amounts of EtOH and assessed for the levels of neuron-specific β-III Tubulin (antibody is included with the kit). Cells were stained with DAPI as a relative measure of the total cell number. Constant levels of DAPI staining indicate that decreases in neuron-specific β-III Tubulin levels are the result of reduced differentiation rather than cell death.

Proteome Profiler™ Angiogenesis Antibody Array

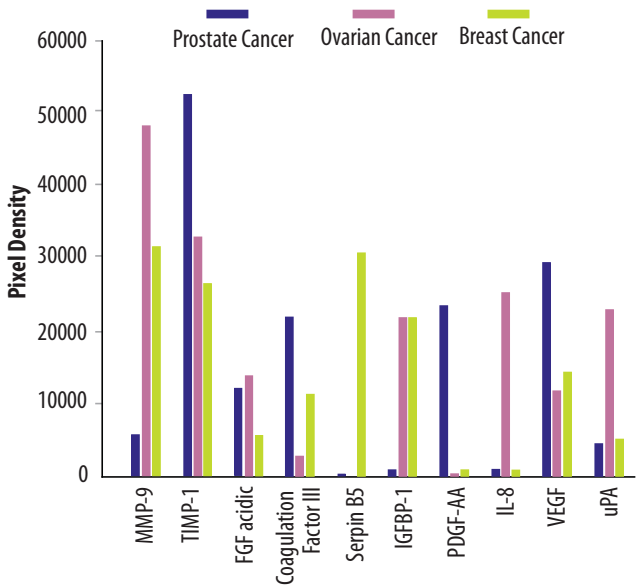
Proteome Profiler Antibody Arrays offer a rapid, sensitive, and economical tool to simultaneously detect the relative levels of multiple analytes in a single sample. The use of these arrays requires no specialized equipment and eliminates the need to perform multiple immunoprecipitation/Western blot experiments. Each array is designed using carefully selected capture antibodies that are spotted in duplicate on nitrocellulose membranes. These membranes are incubated with experimental samples containing the proteins of interest and a cocktail of biotinylated detection antibodies. Streptavidin-HRP and chemiluminescent detection reagents are subsequently added to produce a signal that is proportional to the amount of analyte bound.

R&D Systems now offers a new Proteome Profiler Human Angiogenesis Antibody Array Kit (Catalog # ARY007) that is designed to simultaneously detect the relative levels of 55 different angiogenesis-related proteins (Table below). Please see our website at www.RnDSystems.com/go/ProteomeProfiler for more information on this and our other available multi-analyte profiling kits.

A



B



Relative Protein Expression was Measured in Three Cancer Cell Types.
A: The Proteome Profiler Antibody Array was used to profile angiogenesis-related proteins in tissues from human prostate, ovarian, and breast cancers. **B:** The relative levels of select molecules taken from pixel density measurements of the array images are highlighted in this histogram.

Proteome Profiler Antibody Array Assay Kit

Product	Description	Catalog #	Size
Human Angiogenesis Array Kit	Contains 4 Arrays - each spotted in duplicate with 55 different angiogenesis-related antibodies	ARY007	1 Kit

• Activin A • ADAMTS-1 • Amphiregulin • Angiogenin • Angiopoietin-1 • Angiopoietin-2 • Angiostatin/Plasminogen • Artemin • CCL2/MCP-1 • CCL3/MIP-1α • Coagulation Factor III/TF • CXCL4/PF4 • CXCL8/IL-8 • CXCL16 • DPPIV/CD26 • EG-VEGF/PK1 • EGF • Endoglin/CD105 • Endostatin/Collagen 18 • ET-1 • FGF acidic • FGF basic • FGF-4 • GDNF • GM-CSF • HB-EGF • HGF • IGFBP-1 • IGFBP-2 • IGFBP-3 • IL-1β/IL-1F2 • KGF/FGF-7 • LAP (TGF-β1) • Leptin • MMP-8 • MMP-9 • NRG1-β1/HRG1-β1 • PD-ECGF • PDGF-AA • PDGF-AB/PDGF-BB • Pentraxin 3/TSG-14 • Persephin • P/GF • Prolactin • Serpin B5/Maspin • Serpin E1/PAI-1 • Serpin F1/PEDF • TIMP-1 • TIMP-4 • TSP-1 • TSP-2 • uPA • Vasohibin • VEGF • VEGF-C •

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