

New Products June 2008

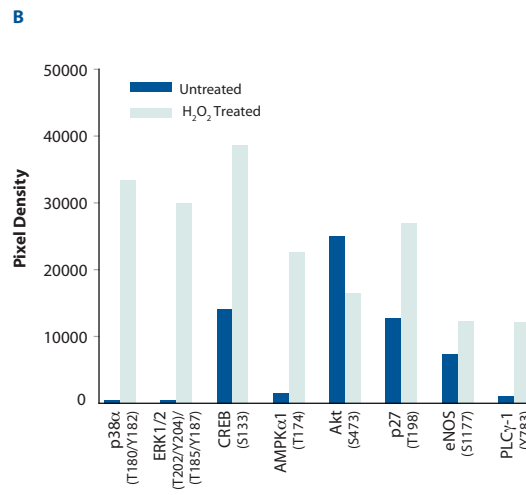
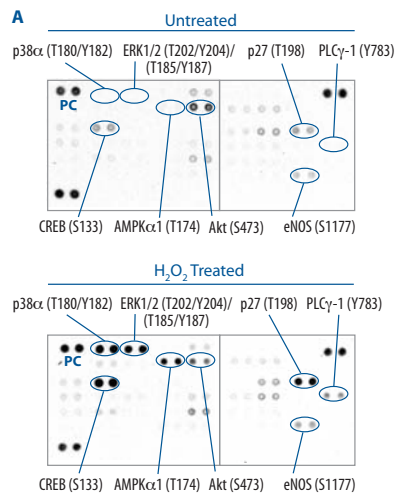


Proteome Profiler™ Antibody Arrays

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 Phospho-Kinase Antibody Array Kit (Catalog # ARY003) that is designed to simultaneously detect the relative phosphorylation of 46 different phospho-specific sites. Please see our website at [www.RnDSystems.com/go/Proteome Profiler](http://www.RnDSystems.com/go/Proteome%20Profiler) for more information on this and our other available multi-analyte profiling kits.



Phosphorylation of Intracellular Kinases in Hydrogen Peroxide-treated Jurkat Cells

A. Human Jurkat cells were either untreated or treated with H₂O₂. The relative levels of phosphorylation of multiple intracellular kinases were simultaneously assessed in cell lysates using the Proteome Profiler™ Human Phospho-Kinase Antibody Array Kit (Catalog # ARY003). PC = positive control. **B.** Histogram profiles for select analytes were generated by quantifying the mean spot pixel densities from the Phospho-Kinase Antibody Array using image analysis software.

Proteome Profiler Antibody Array Assay Kit

Product	Description	Catalog #	Size
Human Phospho-Kinase Array Kit	Contains 4 sets of 2 membranes - each spotted in duplicate with 46 different phospho-specific antibodies	ARY003	1 Kit
<ul style="list-style-type: none"> • Akt (S473) • Akt (T308) • AMPKα1 (T174) • AMPKα2 (T172) • β-Catenin • Chk-2 (T68) • CREB (S133) • ERK1/2 (T202/Y204)/(T185/Y187) • FAK (Y397) • Fgr (Y412) • Fyn (Y420) • GSK-3α/β (S21/S9) • Hck (Y411) • HSP27 (S78/S82) • JNK pan (T183/Y185)/(T221/Y223) • c-JUN (S63) • Lck (Y394) • Lyn (Y397) • MEK1/2 (S218/S222)/(S222/S226) • MSK1/2 (S376/S360) • eNOS (S1177) • p27 (T157) • p27 (T198) • p38 (T180/Y182) • p53 (S15) • p53 (S46) • p53 (S392) • p70 S6 Kinase (T229) • p70 S6 Kinase (T389) • p70 S6 Kinase (T421/S424) • Paxillin (Y118) • PLCγ-1 (Y783) • Pyk2 (Y402) • RSK1/2 (S221) • RSK1/2/3 (S380) • Src (Y419) • STAT1 (Y701) • STAT2 (Y689) • STAT3 (Y705) • STAT4 (Y693) • STAT5a (Y699) • STAT5a/b (Y699) • STAT5b (Y699) • STAT6 (Y641) • TOR (S2448) • Yes (Y426) 			

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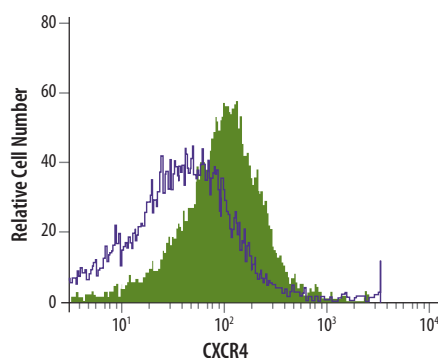
Antiviral Mechanisms of β -Defensin 3

β -defensin 3 (BD3, or BD14 in mouse) is a multifunctional cationic peptide that is secreted by epithelial cells in response to proinflammatory stimulation.¹ In addition to its well recognized antibacterial activity, BD3 protects against cellular infection by a number of viruses including HIV-1, HSV-1 and -2, vaccinia virus, and influenza virus.²⁻⁵

BD3 interferes with viral propagation through interactions with viral and target cell surface structures. It binds intact HIV-1 virions and purified glycoproteins B1 and B2 from HSV, molecules critical for HSV cellular entry.^{2,3} Preincubation of BD3 with HIV-1 particles inhibits viral infectivity, and BD3 can additionally block HSV penetration even after the virus has bound to the cell.^{2,3}

BD3 has also been shown to interact directly with CXCR4 and heparan sulfate, which function as receptors for HIV-1 and HSV, respectively.^{3,6} BD3 binds and induces the internalization of CXCR4 but not CCR5, the alternative HIV-1 co-receptor.^{2,6} Consistent with this observation, BD3 preferentially inhibits the replication of CXCR4-tropic HIV-1 strains relative to CCR5-tropic strains.² Its binding to CXCR4 blocks the ability of CXCR4 to respond to SDF-1, thereby attenuating the calcium flux, ERK phosphorylation, and chemotaxis that SDF-1 would otherwise trigger.⁶

R&D Systems now offers recombinant β -Defensin 3 (Catalog # 4435-BD).



β -Defensin 3 Stimulates a Decrease in the Cell Surface Expression of CXCR4. Flow cytometry was used to detect CXCR4 expression on the surface of Jurkat T cells using PE-conjugated anti-human CXCR4 (Catalog # FAB170P; filled histogram). A typical reduction in fluorescence intensity is observed following a 2 hour pre-treatment with 10 μ g/mL recombinant human β -Defensin 3 (Catalog # 4435-BD; open histogram).

References

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6. Feng, Z. *et al.* (2006) *J. Immunol.* **177**:782.

Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
BoNT/A-LC	<i>C. botulinum</i>	<i>E. coli</i>	4489-ZN-010	10 μ g
CD157	Human	NS0	4736-AC-050	50 μ g
CD157	Mouse	NS0	4710-AC-050	50 μ g
CD163	Human	NS0	1607-CD-050	50 μ g
CD200 R1/HCRT2, Fc Chimera	Mouse	NS0	2554-CD-050	50 μ g
CL-K1/COLEC11	Mouse	NS0	4687-CL-050	50 μ g
Coagulation Factor XIV/Protein C	Mouse	CHO	4885-SE-010	10 μ g
CRACC/SLAMF7	Mouse	CHO	4628-SF-050	50 μ g
CRMB (Variola)	Viral	NS0	4778-CR-010	10 μ g
CXADR, Fc Chimera	Human	NS0	3336-CX-050	50 μ g
β -Defensin 3	Human	<i>E. coli</i>	4435-BD-050	50 μ g
Desert Hedgehog, N-Terminus	Human	<i>E. coli</i>	4777-DH-050	50 μ g
Desmocollin-3	Human	NS0	4630-DC-050	50 μ g
Desmoglein-3, Fc Chimera	Human	NS0	1720-DM-050	50 μ g
DLL1	Human	NS0	1818-DL-050	50 μ g
DMP-1	Mouse	NS0	4386-DM-050	50 μ g
Fc γ RIIIa/CD16a	Human	NS0	4325-FC-050	50 μ g
FGF-23	Mouse	NS0	2629-FG-025	25 μ g
Gas6	Human	NS0	885-GS-050	50 μ g
GFR α -3/GDNF R α -3, Fc Chimera	Mouse	Sf 21	2645-FR-050	50 μ g
Glypican 1	Human	NS0	4519-GP-050	50 μ g
Glypican 1	Mouse	NS0	4520-GP-050	50 μ g
Glypican 6	Human	NS0	2845-GP-050	50 μ g
GP1b α	Human	NS0	4067-GP-050	50 μ g
GPR114	Human	CHO	4747-GP-050	50 μ g
GPR56	Human	CHO	4634-GP-050	50 μ g
HABP1/C1QBP	Mouse	<i>E. coli</i>	4529-HB-050	50 μ g
IL-1 RI, Fc Chimera	Rat	NS0	4895-MR-100	100 μ g
IL-28A/IFN- λ 2	Mouse	NS0	4635-ML-025	25 μ g
Kirrel2	Mouse	NS0	2930-K2-050	50 μ g
Kremen-2	Rat	NS0	4295-KR-025	25 μ g
Kynureninase	Human	Sf 21	4887-KH-010	10 μ g
LRPAP	Mouse	<i>E. coli</i>	4480-LR-050	50 μ g
LSECtin/CLEC4G	Human	NS0	2947-CL-050	50 μ g
MESDC2	Mouse	<i>E. coli</i>	4545-M2-050	50 μ g
Methionine Aminopeptidase 1D	Human	Sf 21	4714-ZN-020	20 μ g
MFG-E8	Human	NS0	2767-MF-050	50 μ g
MIS RII, Fc Chimera	Human	NS0	4749-MR-050	50 μ g
Nectin-3	Human	NS0	3064-N3-050	50 μ g
Nephrin	Mouse	NS0	3159-NN-050	50 μ g
Neutrophil Elastase/ELA2	Mouse	NS0	4517-SE-010	10 μ g
Noelin-1	Mouse	NS0	4636-NL-050	50 μ g
NTB-A/SLAMF6, Fc Chimera	Human	NS0	1908-NT-050	50 μ g
Osteoactivin/GPNMB, Fc Chimera	Human	NS0	2550-AC-050	50 μ g
Phospholipase A2 Group IIA/PLA2G2A	Mouse	Sf 21	4925-PL-010	10 μ g
Plexin C1	Human	NS0	3887-PC-050	50 μ g
RAGE	Canine	NS0	4750-RG-050	50 μ g



Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Reg IV	Human	<i>E. coli</i>	1379-RG-050	50 µg
Reg IV	Mouse	<i>E. coli</i>	4780-RG-050	50 µg
R-Spondin 1	Mouse	<i>E. coli</i>	3474-RS-050	50 µg
R-Spondin 2	Human	NS0	3266-RS-025	25 µg
SCARA5	Mouse	CHO	4754-SR-050	50 µg
Semaphorin 4A, Fc Chimera	Human	NS0	4694-S4-050	50 µg
Serpin A3N	Mouse	NS0	4709-PI-010	10 µg
SIRPα/CD172a, Fc Chimera	Human	CHO	4546-SA-050	50 µg
SPARC-like 1/SPARCL1	Human	NS0	2728-SL-050	50 µg
SPARC-like 1/SPARCL1	Mouse	NS0	4547-SL-050	50 µg
THSD1	Mouse	NS0	4784-TH-050	50 µg
Uteroglobin/SCGB1A1	Human	<i>E. coli</i>	4218-UT-050	50 µg
VEGF 121 (aa 207-327)	Human	<i>E. coli</i>	4644-VS-010	10 µg
Vimentin	Human	<i>E. coli</i>	2105-VI-100	100 µg

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
5'-Nucleotidase/CD73	Mouse	Sheep IgG	AF4488	100 µg
14-3-3β	Human/Mouse/Rat	Goat IgG	AF4724	100 µg
ADAMTS4	Human	Goat IgG	AF4307	100 µg
α-Interneixin	Human/Mouse/Rat	Sheep IgG	AF4844	100 µg
Aminopeptidase LRAP/ERAP2	Human	Goat IgG	AF3830	100 µg
Aminopeptidase N/ANPEP	Human	Sheep IgG	AF3815	100 µg
Aminopeptidase O/ONPEP	Human	Goat IgG	AF4647	100 µg
ASAH1	Human	Goat IgG	AF4494	100 µg
ATR	Human	Goat IgG	AF4717	100 µg
BSRP-A	Human/Mouse	Sheep IgG	AF4916	100 µg
C1D	Human	Goat IgG	AF4816	100 µg
CARMA1/CARD11	Human/Mouse/Rat	Goat IgG	AF4839	100 µg
Casein Kinase 1γ/CK1γ	Human/Mouse/Rat	Sheep IgG	AF3186	100 µg
CD21	Human	Sheep IgG	AF4909	100 µg
CD31/PECAM-1	Porcine	Goat IgG	AF3387	100 µg
CD39L2/ENTPD6	Human	Goat IgG	AF4399	100 µg
CD47	Human	Sheep IgG	AF4670	100 µg
CD109	Human	Sheep IgG	AF4385	100 µg
CDCP1	Mouse	Sheep IgG	AF4515	100 µg
CDO	Human	Sheep IgG	AF4384	100 µg
CILP-1, C-terminal Peptide	Human	Sheep IgG	AF4477	100 µg
Collagen XXV α 1	Human	Sheep IgG	AF4317	100 µg
Complement Factor H-related 1/CFHR1	Human	Sheep IgG	AF4247	100 µg
AlphaA Crystallin/CRYAA	Human/Mouse	Goat IgG	AF4848	100 µg
AlphaB Crystallin/CRYAB	Human/Mouse/Rat	Goat IgG	AF4849	100 µg
CTBS	Human	Goat IgG	AF4829	100 µg
Cyr61/CCN1	Mouse	Sheep IgG	AF4055	100 µg
DNAM-1	Mouse	Sheep IgG	AF4436	100 µg

Continued on page 4.

Reg IV

Reg IV (regenerating gene IV) is a member of the regenerating gene family of proteins which consists of four molecules (I, II, III, IV), all belonging to the C-type lectin superfamily of proteins. While the biological function of Reg IV is currently unclear, its expression in the epithelial cells of the gastrointestinal tract is increased in conditions such as ulcerative colitis, colorectal, hepatocellular, pancreatic, prostate, and gastric cancers.¹⁻³

An increase in Reg IV expression early in carcinogenesis is associated with adenoma formation and increased resistance to apoptotic cell death.⁴ Colorectal cancer cells resistant to therapeutic agents display high levels of Reg IV expression.⁵ Clinical studies also show a correlation between high levels of Reg IV and a poor prognosis. Since Reg IV expression increases from relatively low levels in healthy tissues, to higher levels in cancers of the gastrointestinal tract, it has become a potentially useful diagnostic marker, and is used to evaluate the effectiveness of particular treatments.^{3,6}

While the biological function of Reg IV remains unresolved, *in vitro* experiments indicate that Reg IV can signal through the EGF receptor to activate the Akt/AP-1 pathway in colorectal carcinoma cell lines.⁷ This trans-activation leads to the expression of anti-apoptotic genes, such as Bcl-2, Bcl-x_L, and Survivin. A receptor for Reg IV has yet to be identified, but resistance to apoptosis resulting from Reg IV activity offers a possible explanation for the poor prognosis in cancers with high levels of Reg IV expression.

R&D Systems now offers recombinant human Reg IV (Catalog # 1379-RG) and recombinant mouse Reg IV (Catalog # 4780-RG). The activity of these proteins was measured by their ability to support the adhesion and proliferation of HCT-116 cells.

References

1. Nanakin, A. *et al.* (2007) *Lab. Invest.* **87**:304.
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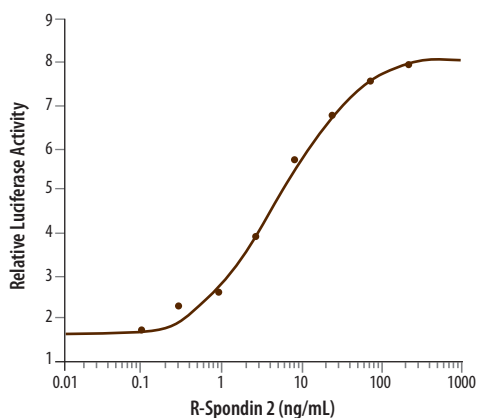


R-Spondin 1/R-Spondin 2

R-Spondin 1 (Rspo1) and R-Spondin 2 (Rspo2) are two of four members of the R-Spondin (Rspo) family of secreted proteins.¹ Rspo proteins play essential roles in vertebrate development through the activation of β -catenin, although many of their functions may overlap with those of the canonical Wnt ligands.¹⁻³ Injection of recombinant Rspo1 in mice leads to the activation of β -catenin, proliferation of intestinal crypt epithelial cells, and amelioration of experimental colitis.⁴⁻⁵ Studies in *Xenopus* and mouse embryos indicate that Rspo2 is an extracellular activator of Wnt/ β -catenin signaling, and is required for myogenesis.⁶

All Rspo proteins share 40-60% pairwise amino acid sequence identity, and are predicted to share substantial structural homology.¹ They all have an N-terminal signal peptide, two adjacent cysteine-rich furin-like domains, and a common thrombospondin (Tsp-1) motif.¹ Both the furin-like and Tsp-1 domains are highly conserved. Tight conservation of the cysteine residues in particular, suggests a common underlying structural architecture.¹ The C-terminal domain in Rspo proteins varies in length, but contains a region of high positive charge that resembles a putative nuclear localization signal.¹

R&D Systems now offers recombinant mouse R-Spondin 1 (Catalog # 3474-RS) and recombinant human R-Spondin 2 (Catalog # 3266-RS). See page 3 for details about these products.



R-Spondin 2 Synergizes with Mouse Wnt-3a to Activate β -catenin. Human recombinant R-Spondin 2 (Catalog # 3266-RS) induces dose-dependent β -catenin activation in the presence of 50 ng/mL recombinant mouse Wnt-3a (Catalog # 1324-WN). β -catenin activity was assessed using a Topflash Luciferase reporter assay in HEK293T cells.

References

- Kim, K-A. *et al.* (2006) *Cell Cycle* **5**:23.
- Kim, K-A. *et al.* (2008) *Mol. Biol. Cell* (Epub ahead of print).
- Nam, J-S. *et al.* (2007) *Gene Expr. Patterns* **7**:306.
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- Zhao, J. *et al.* (2007) *Gastroenterology* **132**:1331.
- Nam, J-S. *et al.* (2006) *J. Biol. Chem.* **281**:13247.

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
<i>Continued from page 3.</i>				
DOK4	Human	Sheep IgG	AF4826	100 μ g
EDNRB/Endothelin R Type B	Human	Sheep IgG	AF4496	100 μ g
ErbB3/HER3	Mouse	Sheep IgG	AF4518	100 μ g
ERMAP	Human	Goat IgG	AF4928	100 μ g
ESGP	Mouse	Sheep IgG	AF4580	100 μ g
EZH2	Human/Mouse	Goat IgG	AF4767	100 μ g
FHL2	Human	Goat IgG	AF4758	100 μ g
Gab2	Human	Sheep IgG	AF4877	100 μ g
Glypican 1	Human	Goat IgG	AF4519	100 μ g
GRB7	Human/Mouse/Rat	Sheep IgG	AF4856	100 μ g
GRK2	Human/Mouse/Rat	Sheep IgG	AF4339	100 μ g
GRP78/HSPA5	Human/Mouse/Rat	Goat IgG	AF4846	100 μ g
Hepsin	Human	Sheep IgG	AF4776	100 μ g
HGF R/c-MET	Canine	Goat IgG	AF4140	100 μ g
Histone Deacetylase 8	Human/Mouse	Sheep IgG	AF4359	100 μ g
α -L-Iduronidase/IDUA	Human	Goat IgG	AF4119	100 μ g
IFN- α / β R2	Human	Sheep IgG	AF4015	100 μ g
IGSF3	Human	Sheep IgG	AF4788	100 μ g
IL-22 R	Mouse	Sheep IgG	AF4294	100 μ g
IL-33 Propeptide	Human	Goat IgG	AF4810	100 μ g
Integrin β 7	Human	Sheep IgG	AF4669	100 μ g
Intellectin-1	Human	Sheep IgG	AF4254	100 μ g
ISG15/UCRP	Human	Goat IgG	AF4845	100 μ g
ISLR-2	Human	Sheep IgG	AF4526	100 μ g
LAMP1/CD107a	Human	Sheep IgG	AF4800	100 μ g
Latexin	Human	Goat IgG	AF3246	100 μ g
MAGP-2	Human	Sheep IgG	AF4914	100 μ g
MELK	Human	Sheep IgG	AF4820	100 μ g
MESDC2	Mouse	Goat IgG	AF4545	100 μ g
MGL1/CD301a	Mouse	Goat IgG	AF4938	100 μ g
mGluR1	Human	Sheep IgG	AF4836	100 μ g
Mrc2	Mouse	Sheep IgG	AF4789	100 μ g
NEDD8	Human/Mouse/Rat	Sheep IgG	AF4936	100 μ g
Neurexin 1 β /NXRN1 β	Rat	Sheep IgG	AF4524	100 μ g
Neuronal Pentraxin R	Human	Sheep IgG	AF4414	100 μ g
OASIS	Human	Goat IgG	AF4080	100 μ g
PAM	Human	Goat IgG	AF4837	100 μ g
PILR- α	Mouse	Goat IgG	AF4318	100 μ g
PLTP	Mouse	Sheep IgG	AF4918	100 μ g
PLUNC	Mouse	Sheep IgG	AF4274	100 μ g
Prohibitin 2	Human/Mouse/Rat	Sheep IgG	AF4794	100 μ g
Protogenin	Mouse	Sheep IgG	AF4919	100 μ g
PSMA/FOLH1/NAALADase I	Human	Sheep IgG	AF4234	100 μ g
RARRES1	Mouse	Goat IgG	AF4657	100 μ g
ROCK2	Human/Mouse/Rat	Goat IgG	AF4790	100 μ g
Ryk	Human	Sheep IgG	AF4907	100 μ g
S100A1	Human	Sheep IgG	AF4476	100 μ g



Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
S100A7	Human	Sheep IgG	AF4475	100 µg
S100A8	Human	Sheep IgG	AF4570	100 µg
S100A11	Human	Goat IgG	AF4874	100 µg
Secretagogin	Human/Mouse/Rat	Goat IgG	AF4878	100 µg
Sirtuin 2/SIRT2	Human	Sheep IgG	AF4358	100 µg
Slit3	Mouse	Goat IgG	AF3629	100 µg
SOD3/EC-SOD	Mouse	Goat IgG	AF4817	100 µg
STAT3	Human	Sheep IgG	AF17991	100 µg
TANK	Human/Mouse	Goat IgG	AF4755	100 µg
TBX6	Human	Goat IgG	AF4744	100 µg
TCL1A	Human	Goat IgG	AF4847	100 µg
TRIM	Human	Goat IgG	AF4708	100 µg
TRPS1	Human	Goat IgG	AF4838	100 µg
TXNDC5	Human	Goat IgG	AF4840	100 µg
Vang-like Protein 2/VANGL2	Human/Mouse/Rat	Sheep IgG	AF4815	100 µg
Vitamin D BP	Mouse	Sheep IgG	AF4188	100 µg
VSIG1	Human	Sheep IgG	AF4818	100 µg
VSIG2	Mouse	Goat IgG	AF4766	100 µg
VSIG3	Human/Mouse	Sheep IgG	AF4915	100 µg
WARP	Mouse	Goat IgG	AF4927	100 µg
ZAG	Human	Goat IgG	AF4764	100 µg
ZAP70	Human	Goat IgG	AF3709	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
AATK	Human	456006	MAB4866	100 µg
Akt2	Human/Mouse/Rat	302514	MAB2315	100 µg
AMICA/JAML	Human	401901	MAB34491	100 µg
Aminoacylase/ACY1	Mouse	475730	MAB2700	100 µg
BLAME/SLAMF8	Human	250014	MAB19072	100 µg
BNP Precursor	Human	370124	MAB36041	100 µg
N-Cadherin	Human	401408	MAB1388	100 µg
CD19	Human	4G7-2E3	MAB4867	100 µg
CD81	Mouse	431301	MAB4865	100 µg
Claudin-3	Human	385021	MAB4620	100 µg
Claudin-10, β Isoform	Human	394513	MAB4279	100 µg
CNP	Human	462608	MAB31271	100 µg
Cyr61/CCN1	Mouse	466305	MAB4864	100 µg
EGF R/ErbB1	Human	423103	MAB10951	100 µg
FCRLB/FCRY	Human	454217	MAB4705	100 µg
GalNAc4S-6ST	Human	388421	MAB3365	100 µg
G-CSF R	Human	38643	MAB3811	500 µg
GFPuv	Multi-species	454518	MAB4240	100 µg
GPIb-α	Human	486805	MAB4067	100 µg
GRK1	Human/Mouse/Rat	466630	MAB4498	100 µg
IGFBP-rp1/IGFBP-7	Mouse	292917	MAB21201	100 µg

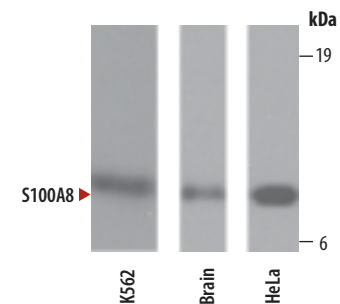
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The S100 Family

The S100 (soluble in 100% saturated ammonium sulfate) family of proteins is a vertebrate-only group of small acidic molecules that currently contains between 20-25 members. This family is the largest group within the 600 member EF-hand superfamily of proteins. EF-hand molecules are named for their two Ca²⁺-binding motifs, each of which are flanked by α-helices that are reminiscent of the E and F helices that make up the right-handed model of carp parvalbumin. Each S100 family member has a letter designation (A; B; P; etc) that defines its gene location, with A family members comprising a gene cluster at Ch1q21. S100 molecules function both extracellularly and intracellularly. Extracellularly, many activate RAGE, while intracellularly, virtually all show Ca²⁺-mediated activities that range from the regulation of protein phosphorylation and enzyme activity, to the maintenance of cell shape and motility.

R&D Systems is offering six new anti-human or anti-mouse antibodies to S100 family members. For other S100 Family-related products, please visit our website at www.RnDSystems.com/go/S100Family

Antibody	Unconjugated (Catalog #)	Biotinylated (Catalog #)
S100A1	AF4476	BAF4476
S100A7	AF4475	
S100A8	AF4570	
S100A11	AF4874	
S100A13		BAF4328



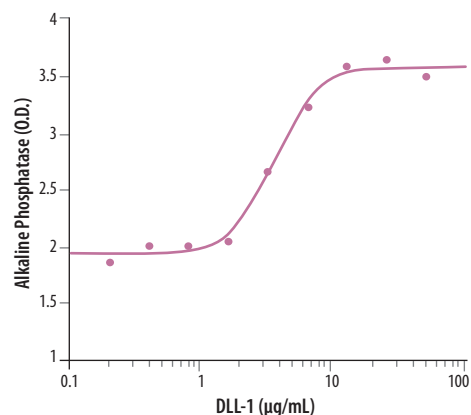
Detection of S100A8 by Western Blot. Lysates from human brain tissue and HeLa and K562 cancer cell lines were resolved by SDS-PAGE, transferred, and immunoblotted with sheep anti-human S100A8 polyclonal antibody (Catalog # AF4570).



DLL1

Delta-like protein 1 (DLL1) is a widely expressed, 90-100 kDa type I transmembrane protein in the Delta/Serrate/Lag-2 (DSL) family of Notch ligands. DLL1 plays an essential role in cell fate specification and embryonic development through its interaction in the Notch signaling pathway. For example, coculturing DLL1-expressing myeloma cells with the mouse MC3T3-E1 osteoblast cell line leads to Notch activation and the subsequent formation of calcified nodules.¹ DLL1 also plays an important role in embryonic somite formation, cochlear hair cell differentiation, and B and T cell lymphocyte differentiation.^{2,7} Recently, DLL1 was also identified as an essential regulator of postnatal arteriogenesis.⁸ Ischemic-induced arteriogenesis strongly induces endothelial DLL1, activating Notch signaling and upregulating Ephrin-B2 (EphB2).⁸ Following hind limb ischemia in heterozygous DLL1 mutant mice, endothelial Notch activation and the induction of EphB2 are absent, abrogating arterial collateral growth and severely impairing the recovery of blood flow.⁸ *In vitro*, angiogenic growth factors in human arterial endothelial cells synergistically activate Notch signaling by inducing DLL1, which in turn induces EphB2- and EphB4-dependent branching morphogenesis.⁸

R&D Systems is now offering recombinant human DLL1 (Catalog # 1818-DL). Please see page 2 for details.



DLL1 enhances BMP-2-induced Alkaline Phosphatase Production. Increasing concentrations of immobilized recombinant human DLL1 (Catalog # 1818-DL) enhances the ability of BMP-2 (50 ng/mL) to induce alkaline phosphatase production in the mouse osteoblastic cell line MC3T3E1.

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2. Takahashi, Y. *et al.* (2003) *Development* **130**:4259.
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4. Kiernan, A.E. *et al.* (2005) *Development* **132**:4353.
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6. Hozumi, K. *et al.* (2004) *Nat. Immunol.* **5**:638.
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8. Limbourg, A. *et al.* (2007) *Circ. Res.* **100**:363.

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
<i>Continued from page 5.</i>				
IL-17 RD/SEF	Mouse	400210	MAB2276	100 µg
IL-20	Human	158633	MAB11022	500 µg
Integrin β8	Human	416922	MAB4775	100 µg
Integrin β8	Human	416911	MAB47751	100 µg
Kallikrein 3/PSA	Human	181811	MAB13442	500 µg
Layilin	Human	328002	MAB26371	500 µg
Matrilin-2	Mouse	388207	MAB3234	100 µg
mGluR5	Human	464818	MAB4514	100 µg
Nanos2	Human	343255	MAB2870	100 µg
Nephrin	Human	451211	MAB4269	100 µg
NPR-1	Human	377029	MAB4860	100 µg
OSF-2/Periostin	Mouse	345616	MAB2955	500 µg
Osteopontin	Human	223112	MAB14332	500 µg
PI 3-Kinase p110	Human/Mouse/Rat	376315	MAB4426	100 µg
PIGF-2	Mouse	62503	MAB4651	500 µg
PRG-1/LPPR4	Human	368701	MAB2874	100 µg
Prokineticin R1	Human	420849	MAB4655	100 µg
PTPRγ	Human/Mouse/Rat	481505	MAB4608	100 µg
Relaxin-1	Human	361513	MAB32572	500 µg
Relaxin-3	Human	332105	MAB31071	500 µg
Serpin A4/Kallistatin	Human	209919	MAB16691	500 µg
Sulfatase Modifying Factor 2/SUMF2	Mouse	382407	MAB3454	100 µg
SUZ12	Human	448909	MAB4184	100 µg
TAF3/FAM19A3	Human	460904	MAB4677	100 µg
Tenascin C	Human	391838	MAB33581	100 µg
VG5Q	Mouse	368011	MAB30481	100 µg
Wnt-9a	Human	326711	MAB3157	100 µg

Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Type	Catalog #	Size
2B4/CD244/SLAMF4	Mouse	Fluorescein	FAB1050F	100 Tests
4-1BB Ligand/TNFSF9	Mouse	Allophycocyanin	FAB1246A	100 Tests
4-1BB Ligand/TNFSF9	Mouse	Fluorescein	FAB1246F	100 Tests
4-1BB Ligand/TNFSF9	Mouse	Phycoerythrin	FAB1246P	100 Tests
AGTR-2	Human	Allophycocyanin	FAB3659A	100 Tests
Aminopeptidase N/ANPEP	Mouse	Phycoerythrin	FAB2235P	100 Tests
B7-H2	Human	Allophycocyanin	FAB165A	100 Tests
B7-H2	Human	Phycoerythrin	FAB165P	100 Tests
BACE-1	Human	Allophycocyanin	IC931A	100 Tests
BACE-1	Human	Fluorescein	IC931F	100 Tests
BCMA/TNFRSF17	Human	Fluorescein	FAB193F	100 Tests
BCMA/TNFRSF17	Human	Phycoerythrin	FAB193P	100 Tests

Labeled Antibodies

Fluorochrome-labeled Antibodies

Antibody	Species	Type	Catalog #	Size
CCR7	Mouse	Fluorescein	FAB3477F	100 Tests
CD27/TNFRSF7	Human	Allophycocyanin	FAB382A	100 Tests
CD27/TNFRSF7	Human	Fluorescein	FAB382F	100 Tests
CD27/TNFRSF7	Human	Phycoerythrin	FAB382P	100 Tests
DARC	Human	Allophycocyanin	FAB4139A	100 Tests
DC-LAMP	Human	Phycoerythrin	FAB4087P	100 Tests
IL-2	Porcine	Allophycocyanin	IC6521A	100 Tests
IL-4 R	Mouse	Fluorescein	FAB530F	100 Tests
IL-4 R	Mouse	Phycoerythrin	FAB530P	100 Tests
IL-6 R	Human	Allophycocyanin	FAB227A	100 Tests
IL-6 R	Human	Fluorescein	FAB227F	100 Tests
IL-6 R	Human	Phycoerythrin	FAB227P	100 Tests
IL-6 R	Mouse	Phycoerythrin	FAB1830P	100 Tests
IL-9 R	Human	Phycoerythrin	FAB290P	100 Tests
IL-15 R α	Mouse	Fluorescein	FAB551F	100 Tests
IL-17	Mouse	Fluorescein	IC421F	100 Tests
IL-17	Mouse	Phycoerythrin	IC421P	100 Tests
IL-17D	Mouse	Phycoerythrin	IC2274P	100 Tests
IL-17E	Mouse	Fluorescein	IC13991F	100 Tests
IL-17E	Mouse	Phycoerythrin	IC13991P	100 Tests
IL-17F	Human	Fluorescein	IC13351F	100 Tests
IL-24	Human	Allophycocyanin	IC19653A	100 Tests
IL-24	Human	Fluorescein	IC19653F	100 Tests
IL-24	Human	Phycoerythrin	IC19653P	100 Tests
IgG ₃	Mouse	Allophycocyanin	IC007A	50 μ g
IgG ₃	Mouse	Fluorescein	IC007F	50 μ g
IgG ₃	Mouse	Phycoerythrin	IC007P	50 μ g
Integrin α 3/CD49c	Human	Allophycocyanin	FAB1345A	100 Tests
Integrin α 3/CD49c	Human	Fluorescein	FAB1345F	100 Tests
Integrin α 3/CD49c	Human	Phycoerythrin	FAB1345P	100 Tests
Integrin α L/CD11a	Human	Allophycocyanin	FAB3595A	100 Tests
LDL R	Mouse	Fluorescein	FAB2255F	100 Tests
LDL R	Mouse	Phycoerythrin	FAB2255P	100 Tests
MCAM/CD146	Rat	Allophycocyanin	FAB3250A	100 Tests
MCAM/CD146	Rat	Fluorescein	FAB3250F	100 Tests
MCAM/CD146	Rat	Phycoerythrin	FAB3250P	100 Tests
MS4A1/CD20	Human	Allophycocyanin	FAB4225A	100 Tests
MS4A1/CD20	Human	Fluorescein	FAB4225F	100 Tests
MS4A1/CD20	Human	Phycoerythrin	FAB4225P	100 Tests
PD-1	Mouse	Fluorescein	FAB1021F	100 Tests
PD-L2	Mouse	Fluorescein	FAB1022F	100 Tests
PD-L2	Mouse	Phycoerythrin	FAB1022P	100 Tests
SSEA-4	Human/Mouse	Fluorescein	FAB1435F	100 Tests
TGF- β RIII	Human	Fluorescein	FAB242F	100 Tests
TGF- β RIII	Human	Phycoerythrin	FAB242P	100 Tests
ULBP-1	Human	Fluorescein	IC1380F	100 Tests
ULBP-1	Human	Phycoerythrin	IC1380P	100 Tests

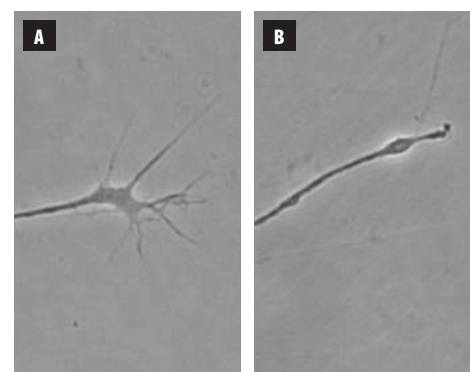
Sema4A & Plexin C1

Semaphorins of several classes, including class 4 trans-membrane and class 7 membrane-anchored semaphorins, are involved in cell migration during development and within the immune system. Binding of semaphorins to plexins, or alternate receptors, can result in context-specific downstream effects, such as repulsion or attraction of the cell, or modulation of integrin activity.^{1,2}

Semaphorin 4A (Sema4A, previously semaB) was first described as a TIM-2 ligand that enhances T cell activation.³ Subsequently, Sema4A has also been shown to induce growth cone collapse in primary hippocampal neurons, and to interact with Plexin D1 to mediate signaling pathways that oppose the actions of VEGF.^{4,5} Mutations of human Sema4A have been associated with retinitis pigmentosa and cone rod dystrophy.⁶

Plexin C1 (CD232; VESPR) binds to Semaphorin 7A (Sema7A; CD108), and also serves as a receptor for poxvirus and herpes virus semaphorin homologs.^{2,7,8} During development, Plexin C1 likely plays a role in the partitioning of neurons in the hypothalamus.⁷ Plexin C1 and β 1 integrins, which are both Sema7A receptors, have opposing effects on Sema7A-induced dendrite formation.⁸

R&D Systems now offers recombinant human Semaphorin 4A (Catalog # 4694-S4) and Plexin C1 (Catalog # 3887-PC). See pages 2 and 3 for details about these products. For other Semaphorin or Plexin-related products, visit our website at www.RnDSystems.com/go/Semaphorins.



Sema4A-mediated Growth Cone Collapse. **A:** A fully extended chick dorsal root ganglion (DRG) growth cone. **B:** Collapse of a DRG growth cone following treatment with recombinant human Semaphorin 4A (Catalog # 4694-S4).

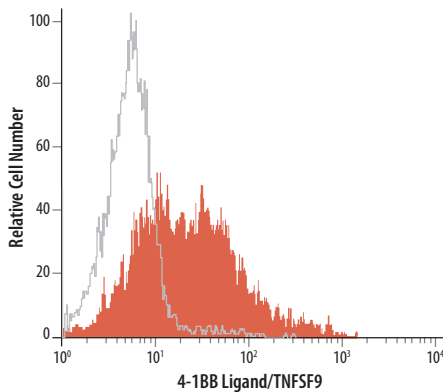
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3. Kumanogoh, A. *et al.* (2002) *Nature* **419**:629.
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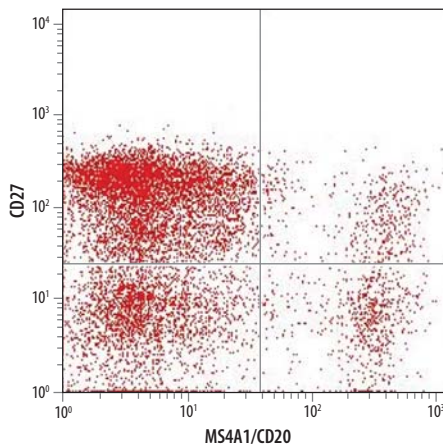
Fluorochrome-conjugated B Cell Antibodies for Flow Cytometry

Multiple receptors are expressed on the surface of B cells during different stages of development and maturation. Detection of these molecules is useful for defining B cell subsets and for studying receptor functions, particularly those involved in different stages of B cell development. MS4A1/CD20 is expressed on all B cells from early pre-B through mature and memory B cells, while CD27/TNFRSF7 is used as a marker for memory B cells. BCMA/TNFRSF17 is involved in plasma cell regulation. IL-6 R delivers survival signals to activated B cells and plasma cells. Finally, B7-H2 (ICOS L) is upregulated on B cells during Th1 responses, and 4-1BB ligand/TNFSF9 is upregulated on some activated B cells and in B cell malignancies.

R&D Systems offers a large collection of reagents that recognize B cell surface proteins. Please see pages 6 and 7 for details about our new fluorochrome-conjugated B cell antibodies.



Detection of 4-1BB Ligand/TNFSF9 in Raji Cells by Flow Cytometry. Burkitt lymphoma-derived human Raji cells were stained with PE-conjugated anti-human 4-1BB Ligand/TNFSF9 (Catalog # FAB2295P; filled histogram) or isotype control antibody (Catalog # IC0041P; open histogram).



Detection of CD27 and MS4A1/CD20 Expression on Blood-derived Lymphocytes by Flow Cytometry. Blood-derived lymphocytes were stained with both APC-conjugated anti-human CD27 (Catalog # FAB382A) and PE-conjugated anti-human MS4A1/CD20 (Catalog # FAB4225P) revealing four distinct lymphocyte subsets.

Labeled Antibodies

Biotinylated Antibodies

Antibody	Species	Type	Catalog #	Size
5'-Nucleotidase/CD73	Mouse	Sheep IgG	BAF4488	50 µg
Aminopeptidase N/ANPEP	Human	Sheep IgG	BAF3815	50 µg
BLAME/SLAMF8	Mouse	Sheep IgG	BAF4156	50 µg
CD39L3/ENTPD3	Mouse	Sheep IgG	BAF4464	50 µg
CD109	Human	Sheep IgG	BAF4385	50 µg
CEACAM-5/CD66e	Human	Sheep IgG	BAF4128	50 µg
CILP-1, C-Terminal Fragment	Human	Sheep IgG	BAF4477	50 µg
EGF	Rat	Sheep IgG	BAF3214	50 µg
EDNRB/ Endothelin R Type B	Human	Sheep IgG	BAF4496	50 µg
EphB4	Human	Goat IgG	BAF3038	50 µg
EphB6	Human	Sheep IgG	BAF3384	50 µg
ESGP	Mouse	Sheep IgG	BAF4580	50 µg
FGF R5/FGFRL1	Human	Goat IgG	BAF2257	50 µg
FPRP	Mouse	Sheep IgG	BAF4495	50 µg
HAI-1	Human	Mouse IgG1	BAM10482	250 µg
Hepsin	Human	Sheep IgG	BAF4776	50 µg
α-L-Iduronidase/IDUA	Human	Sheep IgG	BAF4119	50 µg
IFN-α/β R2	Human	Sheep IgG	BAF4015	50 µg
IGSF3	Human	Sheep IgG	BAF4788	50 µg
IL-9	Rat	Sheep IgG	BAF4134	50 µg
IL-22 R	Mouse	Sheep IgG	BAF4294	50 µg
LAMP1/CD107a	Human	Sheep IgG	BAF4800	50 µg
LILRC1	Mouse	Sheep IgG	BAF4334	50 µg
Nanog	Mouse	Goat IgG	BAF2729	50 µg
Nectin-3	Human	Goat IgG	BAF3064	50 µg
Notch-1	Rat	Goat IgG	BAF1057	50 µg
NTAL	Human	Sheep IgG	BAF4066	50 µg
OSM Rβ	Human	Goat IgG	BAF4389	50 µg
Park7/DJ-1	Human	Goat IgG	BAF3995	50 µg
Paxillin	Human	Sheep IgG	BAF4259	50 µg
PBEF	Human	Sheep IgG	BAF4335	50 µg
PEAR1	Human	Goat IgG	BAF4527	50 µg
RBP4	Human	Goat IgG	BAF3378	50 µg
Ryk	Mouse	Sheep IgG	BAF4649	50 µg
S100A1	Human	Sheep IgG	BAF4476	50 µg
S100A13	Mouse	Goat IgG	BAF4328	50 µg
Serpin A12	Human	Sheep IgG	BAF4410	50 µg
Serpin B6	Human	Sheep IgG	BAF4336	50 µg
SOX15	Human	Sheep IgG	BAF4070	50 µg
Versican	Human	Goat IgG	BAF3054	50 µg
VSIG2	Mouse	Goat IgG	BAF4766	50 µg
ZAG	Human	Goat IgG	BAF4764	50 µg

NorthernLights™ Secondary Antibodies

Description	Conjugate	Catalog #	Size
Goat Anti-Chicken IgY	NorthernLights-557	NL016	500 µL
Goat Anti-Chicken IgY	NorthernLights-637	NL017	500 µL
Goat Anti-Chicken IgY	NorthernLights-493	NL018	500 µL

PlusCollect™ Cell Selection & Detection Kits

Analyte	Species	Catalog #	Size
CD4	Human	PLS379	1 Kit
CXCR4	Human	PLS170	1 Kit
E-Selectin/CD62E	Human	PLS724	1 Kit
VCAM-1/CD106	Human	PLS809	1 Kit

Cell-Based ELISAs

Analyte	Species	Catalog #	Size
Phospho-HGF R/c-MET (Y1234/Y1235)	Human	KCB2480	1 Kit

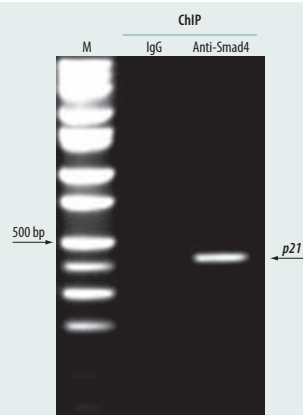
ExactaChIP™ Chromatin Immunoprecipitation Kits

ChIP Kit Antibody	Species	Catalog #	Size
β-Catenin	Human	ECP1329	1 Kit
p53	Human	ECP1355	1 Kit
Smad4	Human	ECP2097	1 Kit
STAT5a/b	Human/Mouse	ECP2168	1 Kit

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 potential transcription factor-regulated genes 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 Smad4 Genomic Targets by Chromatin Immunoprecipitation. Human Jurkat leukemic T cells were stimulated overnight with recombinant human IL-12 (Catalog # 219-IL), fixed, and lysed. Smad4 binding to the p21 promoter was assessed using the Smad4 ExactaChIP Chromatin IP Kit (Catalog # ECP2097). Briefly, cell lysates were incubated with biotinylated anti-human Smad4 polyclonal antibody or biotinylated anti-goat IgG polyclonal antibody (both provided in the kit) followed by MagCollect™ Streptavidin Ferrofluid (Catalog # MAG999). DNA was purified from the immunoprecipitates, and the p21 promoter was detected by standard PCR. M=DNA marker.

SUZ12 and EZH2: key components of PRC2

Increasing evidence points to the importance of epigenetic mechanisms in the process of embryonic stem cell differentiation. Enzymatic modification of histone tails influences local chromatin structure, which in turn affects gene expression.

Proteins controlling developmental gene expression through effects on chromatin structure were identified in *Drosophila* and named Polycomb group proteins.¹ These proteins have orthologs across species and assemble into complexes that repress key regulatory genes.² One such complex is PRC2 (Polycomb Repressive Complex 2), which likely plays an important role in the balance between pluripotency and differentiation in human ES cells.³ The core elements of human PRC2 include SUZ12 (suppressor of zeste 12), EZH2 (enhancer of zeste 2), and EED (embryonic ectoderm development protein).⁴ PRC2 methylates histone H3 tails at Lys27, with EZH2 providing the histone methyltransferase activity.⁴ Genes encoding developmentally important transcriptional mediators are occupied, and apparently regulated, by PRC2.^{3,5} In mouse ES cells lacking SUZ12, the murine counterparts of these developmental regulators were found to be inappropriately upregulated in undifferentiated ES cells, leading to the working model that PRC2 functions in ES cells to repress genes that are activated during differentiation.^{3,6}

R&D Systems offers a new affinity-purified anti-human/mouse EZH2 antibody (Catalog # AF4767) and anti-human SUZ12 monoclonal antibody (Catalog # MAB4184). See pages 4 and 6 for details about these products.

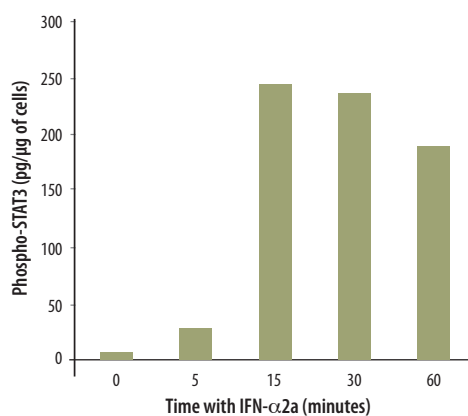
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- Cao, R. & Y. Zhang (2004) *Curr. Opin. Genet. Dev.* **14**:155.
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Phospho-STAT3 (705)

Signal Transducer and Activator of Transcription (STAT) proteins constitute a family of transcription factors comprised of six members and their multiple splice variants. STAT proteins are typically located in the cytosol where they are phosphorylated on tyrosine residues by the Janus family kinases and on serine residues by kinases such as the MAPKs.¹ Specific phosphorylation events induce the dimerization and translocation of the STAT proteins to the nucleus where they function as gene-specific transcription factors.² Initial studies on STAT3 activation were tied to the effects of IL-6 in the inflammatory response, and the ability of STAT3 to inhibit apoptosis and promote cell growth. Subsequent studies showed that oncogenes and growth factors also trigger the signaling cascade that leads to the phosphorylation of STAT3 on Tyr705, resulting in its nuclear translocation, and the altered expression of a multiplicity of genes. Therefore, phosphorylation of STAT3 at Tyr705 serves as an indicator of STAT3 activation. The effects of phosphorylation at other sites on STAT3, such as Ser727, are being investigated.³ Notably, unphosphorylated STAT3, like STAT1, also regulates unique gene promoters by forming dimers with NFκB and p300.⁴ In addition, STAT3 acetylation at specific lysine residues can also alter its activity as a transcription factor.⁵ Thus, it appears the activity of STAT3 can be modulated by a variety of different mechanisms resulting in distinct biological outcomes.



IFN-α2a-induced STAT3 Phosphorylation in Daudi Cells. Burkitt lymphoma-derived human Daudi cells were treated with recombinant human IFN-α2a (Catalog # 11100-1) for the indicated times. Cell lysates were assessed for STAT3 phosphorylation using the human/mouse phospho-STAT3 (Y705) DuoSet IC ELISA (Catalog # DYC4607).

References

1. Yang, J. & G. R. Stark (2008) *Cell Res.* **18**:443.
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3. Kovarik, P. *et al.* (2001) *EMBO J.* **20**:91.
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Cell Culture Media & Supplements

Product	Species	Catalog #	Size
Human Feeder Cell Conditioned Media	Human	AR007	100 mL
StemXVivo™ Adipogenic Supplement (100X)	Human/Mouse	CCM011	1 Vial

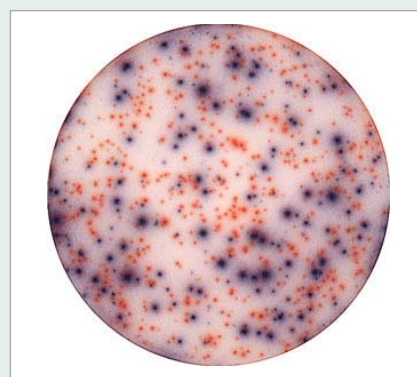
Dual Color ELISpot Kits

Analytes	Species	Catalog #	Size
IFN-γ/IL-2	Human	ELD4506	1 Kit

Dual-Color ELISpot

ELISpot detection of IFN-γ-secreting cells is often used to assess immune responses to pathogens. Antigen-specific IFN-γ secretion is typically associated with Th1 immune responses and is linked to the cytotoxic capacity of T cells.¹ In some cases, however, measurement of IFN-γ alone does not correlate with long-term immune responses or pathogen control. The simultaneous measurement of IFN-γ and IL-2 using ELISpot has been used to provide additional information about immune memory responses which are a key component of vaccine-induced immunity.² The frequency of dual-secreting cells has been linked to slow HIV progression in response to HIV peptides, and correlates positively with CD4 cell counts and viral load control.³ In addition, vaccine testing on malaria-exposed individuals indicates that the number of double-positive cells after immunization is a much better predictor of resting memory at three months than either IFN-γ or IL-2 alone.⁴

R&D Systems is now offering a human IFN-γ/IL-2 Dual Color ELISpot Kit (Catalog # ELD4506) designed to simultaneously detect IL-2 and IFN-γ secreting cells at the single cell level. ELISpot assays are highly reproducible and sensitive, and can be used to measure responses with frequencies below 1 in 10,000 cells.



Detection of IFN-γ and IL-2 Secretion in Human PBMCs. IFN-γ (blue spots) and IL-2 (red spots) secretion in human peripheral blood mononuclear cells (PBMCs) stimulated with PMA/Ca²⁺ ionomycin was detected using the IFN-γ/IL-2 Dual Color ELISpot Kit (Catalog # ELD4506).

References

1. Horton, H. *et al.* (2004) *J. Infect. Dis.* **190**:1692.
2. Boulet, S. *et al.* (2007) *J. Immunol. Methods* **320**:18.
3. Peretz, Y. *et al.* (2007) *Clin. Immunol.* **124**:57.
4. Bejon, P. *et al.* (2006) *Infect. Immun.* **74**:6331.

Fluorokine® Receptor Detection Kits

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

Labeled Ligand	Species	Catalog #	Size
IL-22	Human	NF2200	1 Kit

ELISA & Activity Assay Development Kits

DuoSet® ELISA Development Systems

Analyte	Species	Catalog #	*Reagents for
B7-2/CD86	Rat	DY1340	15 Plates
Carbonic Anhydrase IX	Human	DY2188	15 Plates
CXCL8/IL-8	Feline	DY2277	15 Plates
DR6/TNFRSF21	Human	DY144	15 Plates
G-CSF sR/CD114	Human	DY381	15 Plates
IFN- γ	Bovine	DY2300	15 Plates
IL-7 R α /CD127	Mouse	DY747	15 Plates
LIMP2/SR-B2	Human	DY1966	15 Plates
MAG/Siglec-4a	Rat	DY538	15 Plates
Mimecan	Mouse	DY2949	15 Plates
Osteopontin	Human	DY1433	15 Plates
PIGF-2	Mouse	DY465	15 Plates
ROBO1	Rat	DY1749	15 Plates
VEGF, 165 aa, b variant	Human	DY3045	15 Plates

*Also available in 45 plate Economy Packs.

DuoSet IC (Intracellular) ELISAs & Activity Assays

Analyte	Species	Catalog #	*Reagents for
Total APE	Human	DYC1044-2	2 Plates
Total HO-1/HMOX1/HSP32	Human	DYC3776-2	2 Plates
Total PP2A	Human/Mouse/Rat	DYC1653-2	2 Plates
Phospho-TrkC	Human	DYC2577-2	2 Plates
Total TrkC	Human	DYC373-2	2 Plates
Phospho-STAT3 (Y705)	Human/Mouse	DYC4607-2	2 Plates
Total EMMPRIN/CD147	Human	DYC972-2	2 Plates

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

CD38 and CD157: Regulators of Ca²⁺ Mobilization and Cell Migration

CD38 and CD157 are cell surface ectoenzymes attached to the plasma membrane by an N-terminal membrane-spanning peptide or C-terminal glycosylphosphatidylinositol anchor, respectively. Both proteins are highly expressed in cells of hematopoietic lineage, and CD38 is also expressed in the hypothalamus and pancreas. CD157 was initially identified as bone marrow stromal cell antigen (BST-1). Both enzymes are ADP-ribosyl cyclases, converting NAD⁺ and NADP⁺ into cyclic ADP-ribose and NAADP⁺, molecules with Ca²⁺ mobilizing effects.¹ In addition, both enzymes are capable of hydrolyzing cyclic ADP-ribose to ADP-ribose. Recent evidence indicates that CD38 plays a role in oxytocin release by the hypothalamus and pituitary gland. CD38 knockout mice were observed to have social defects in areas such as maternal nurturing and pair-bond formation.²

CD38 and CD157 also function as cell surface receptors. Interactions between CD38 and CD19/CD81 on the surface of B and T lymphocytes are important for cell polarization and migration.³ The association of CD157 with the CD11b/CD18 complex on neutrophils mediates their adhesion and migration.⁴ These receptor functions are independent of ADP-ribosyl cyclase activity.

R&D Systems now offers recombinant human and mouse CD157 (Catalog # 4736-AC and 4710-AC). Please see page 2 for details.

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Heme Oxygenase-1

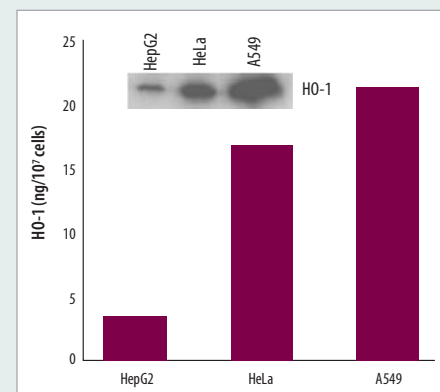
Heme oxygenase is an essential microsomal enzyme required for the catabolism of heme to biliverin, carbon monoxide (CO), and free Fe²⁺.¹ Heme oxygenase occurs as two isozymes, the inducible heme oxygenase 1 (HO-1/HMOX1/HSP32) and the constitutively expressed heme oxygenase 2 (HO-2/HMOX2).² HO-1 is induced by its substrate heme, or by stress-inducing agents such as heat shock, UVA radiation, heavy metals, hypoxia, endotoxin, and other oxidative stimuli.^{3,4} Induction of HO-1 has a protective effect on cells by decreasing oxidative stress, reducing the inflammatory response, preventing apoptosis, and regulating cell proliferation.^{5,6} Harnessing the therapeutic potential of heme oxygenases is an area of ongoing research.^{5,6} The expression of HO-1 is frequently upregulated in tumor tissues and levels are further increased in response to chemotherapy or radiation.⁷

Inhibition of HO-1 in tumor cells may lead to more effective treatments and favorable outcomes.⁷

R&D Systems now offers a HO-1 DuoSet IC ELISA Development System (Catalog # DYC3776) to measure the levels of HO-1 in cell lysates.

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HO-1 Expression in Human Cell Lines. Lysates from human HepG2, HeLa, and A549 human cancer cell lines were quantified with the HO-1 DuoSet IC ELISA (Catalog # DYC3776). The same lysates were also immunoblotted (inset) with anti-HO-1 polyclonal antibody (Catalog # AF3776). The DuoSet IC ELISA results are consistent with the relative amounts of HO-1 detected by Western blot.

IL-23 Quantikine® ELISA Kits

Interleukin 23 (IL-23) is a heterodimeric cytokine composed of two disulfide-linked subunits, a p19 subunit that is unique to IL-23, and a p40 subunit that is shared with IL-12.¹ The functional IL-23 receptor complex consists of two receptor subunits, the IL-12 receptor β 1 binding subunit (IL-12 R β 1) and the IL-23-specific receptor subunit (IL-23 R), which is necessary for signaling.^{1,2} IL-23 initiates a signal transduction cascade similar to that of IL-12, and involves Jak2, Tyk2, STAT1, STAT3, STAT4, and STAT5.²

IL-23 is produced by dendritic cells and macrophages in response to pathogens, including certain bacteria and viruses and/or their components.³ The IL-23 immune pathway induces the earliest recruitment of neutrophils to the site of infection and has a role in the development/maintenance of a T cell subset characterized by the production of IL-17A, IL-17F, IL-6, and TNF- α .³⁻⁵ The IL-23/IL-17 axis is an important mediator of inflammation. In mouse models, transgenic over-expression of IL-23 leads to a systemic inflammatory response.⁶ IL-23 effects on IL-17-producing T cells may also enhance the development of several models of autoimmune disease, including

experimental allergic encephalomyelitis, collagen-induced arthritis, colitis, and diabetes.^{5,7-12} IL-23 may also play a role in increased tumor growth associated with chronic inflammation.¹³ In humans, IL-23 has been found upregulated in several pathologies resulting from immune function defects including psoriasis, Crohn's disease, and multiple sclerosis.¹⁴⁻¹⁶

The Quantikine Human and Mouse IL-23 Immunoassays are each 4.5 hour solid-phase ELISAs designed to measure both subunits of IL-23 in cell culture supernates, serum, and plasma. These immunoassays accurately quantitate naturally occurring human or mouse IL-23.

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ELISA & Activity Assay Kits

Quantikine ELISA Kits

Analyte	Species	Sensitivity	Range	Catalog #	Size
Chitinase 3-like 1	Mouse	16 pg/mL	62.5-4000 pg/mL	MC3L10	1 Kit
Dkk-1	Mouse	29.6 pg/mL	62.5-4000 pg/mL	MKK100	1 Kit
ICAM-1/CD54	Human	0.254 ng/mL	1.56-50 ng/mL	DCD540	1 Kit
IL-23	Human	16.3 pg/mL	39.0-2500 pg/mL	D2300B	1 Kit
IL-23	Mouse	4.17 pg/mL	15.6-1000 pg/mL	M2300	1 Kit
E-Selectin/CD62E	Human	0.027 ng/mL	0.125-8 ng/mL	DSLE00	1 Kit



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