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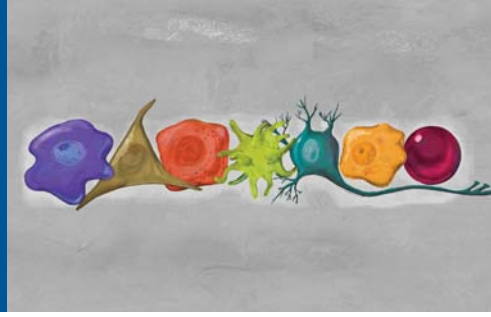

Quantikine® Human VEGF-C ELISA

The vascular endothelial growth factors (VEGFs) are well known for their important roles in vascular and lymphatic vessel growth and development in normal and pathophysiological processes. The full-length versions of VEGF-C and VEGF-D define a VEGF subfamily characterized by the conserved VEGF homology domain (VHD), flanking N- and C-terminal pro-regions, and an N-terminal signal sequence.[1,2] The VEGF-C C-terminal pro-region is cysteine-rich with two copies of a $C_6C_{10}CRC$ motif and five nearly complete copies of a $C_{10}CXCXC$ motif.[1-3] The VEGF-C propeptide undergoes stepwise proteolytic processing by Furin, PC5, PC7 and Plasmin to separate the VHD from the C- and N-terminal regions.[4,5] VHD dimers are high-affinity ligands for VEGF R2 (KDR) and VEGF R3 (Flt-4).[2] VEGF-C can only bind VEGF R2 once fully matured, but can bind VEGF R3 with increasing affinity as it is processed.[6] There is also some evidence to suggest that Integrin $\alpha_9\beta_1$ and the Semaphorin/VEGF family receptor Neurophilin-2 may act as receptors or co-receptors for VEGF-C.[7,8]

VEGF-C is expressed in multiple adult human tissues, most prominantly in lymph nodes, heart, placenta, ovary, and small intestine.[3] The VEGF-C/VEGF R3 signaling pathway is known to play a key role in lymphangiogenesis. VEGF-C and VEGF R3 are co-expressed at sites of lymphatic vessel sprouting in the embryo.[9] *In vitro*, VEGF-C/VEGF R3 promotes the survival, proliferation, and migration of lymphatic endothelial cells, and induces signaling cascades that include PKC, MAP kinase, PI3 K, and Akt.[10] In addition to their primary physiological roles in leukocyte trafficking and fluid homeostasis, the lymphatics also act as pathways for tumor cell metastases.[11,12] Elevated VEGF-C levels have been correlated with many human cancers and expression may be a predictor of lymph node metastases.[13]

R&D Systems™ Quantikine human VEGF-C immunoassay (Catalog # DVEC00) is a 4.5 hour solid phase ELISA designed to measure VEGF-C in cell culture supernates, serum, plasma and saliva.

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ELISA & Activity Assay Kits

Analyte	Species	Sensitivity	Range	Cataog #	Size
IGF-I	Mouse	*data not available at time of printing*		MG100	1 Kit
PDGF-BB	Mouse/Rat	7.7 pg/mL	31.2-2000 pg/mL	MBB00	1 Kit
VEGF-C	Human	13.3 pg/mL	109-7000 pg/mL	DVEC00	1 Kit

contents

DNAM-1 Ligands: CD155/PVR & Nectin-2/CD112

DNAM-1 (DNAX accessory molecule-1; CD226) is an Ig family activating receptor involved in lymphocyte adhesion and signaling.[1-4] It recognizes two ligands on target cells, CD155 (also known as poliovirus receptor, PVR) and Nectin-2 (also known as poliovirus-related receptor 2, PRR2; CD112).[2,3] These interactions are partially responsible for killer cell recognition of specific target cells.[1,2] DNAM-1 is expressed on most NK cells, T cells, monocytes, and a subset of B cells.[1] It is a 65 kDa, transmembrane glycoprotein with two extracellular Ig V-like domains and a cytoplasmic tail containing three tyrosine residues. Engagement of DNAM-1 on NK cells by cross-linking antibodies or by its ligands triggers phosphorylation of cytoplasmic tyrosine residues, cytokine secretion, and lysis of target cells.[1-3]

CD155 and Nectin-2 belong to a family of Ig-like molecules called nectins that mediate cell adhesion and migration through homotypic and heterotypic interaction with other nectins.[5] Both proteins have three extracellular Ig domains and are phosphorylated within their cytoplasmic domains upon ligand binding.[6,7] CD155 is localized to cell-matrix adhesions and cell-cell junctions and plays a key role in cell motility during tumor cell invasion and migration.[8] Nectin-2 is widely expressed and occurs at intercellular junctions. It is known to bind homotypically and also acts as a herpesvirus entry mediator.[9]

DNAM-1 has also emerged as a significant contributor to natural cytotoxicity.[1-4] It is usually co-expressed with other killer cell receptors and is seldom the exclusive mediator of this activity. DNAM-1 activity is also under the control of the HLA class I-specific inhibitory receptors that prevent lysis of normal cells. Further, both CD155 and Nectin-2 are expressed on a wide variety of tumor cell lines, but are mostly absent from EBV-transformed B cells, suggesting that DNAM-1 contributes to immune surveillance of tumor cells.[1,2]

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Recombinant & Natural Proteins

	Protein	Species	Source	Catalog #	Size
●	4-1BB Ligand/TNFSF9	Human	NS0	2295-4L-025	25 µg
❖	Aminopeptidase A/ENPEP	Human	NS0	2499-ZN-010	10 µg
❖	Aminopeptidase P2/XPNPEP2	Human	NS0	2490-ZN-010	10 µg
		Mouse	NS0	2494-ZN-010	10 µg
❖	Aminopeptidase PILS/ARTS1	Mouse	NS0	2500-ZN-010	10 µg
	Arylsulfatase A	Human	NS0	2485-SU-020	20 µg
✦	BMP-8b	Human	*E. coli*	1073-BP-010	10 µg
❍	Cadherin-12/Fc Chimera	Human	NS0	2240-CA-050	50 µg
	Carbonic Anhydrase IV	Mouse	NS0	2414-CA-010	10 µg
	Carbonic Anhydrase XIV	Mouse	NS0	2504-CA-010	10 µg
❖	Carnosine Dipeptidase 1	Human	NS0	2489-ZN-010	10 µg
	CD36/SR-B3/Fc Chimera	Mouse	CHO	2519-CD-050	50 µg
	CD55/DAF	Human	NS0	2009-CD-050	50 µg
	CD97	Human	NS0	2529-CD-050	50 µg
	CD155/PVR	Human	NS0	2530-CD-050	50 µg
	Chordin-like 2	Mouse	NS0	2520-CH-050	50 µg
	CLC/CNTF sRα	Human	NS0	2415-CR-025	25 µg
❖	Coagulation Factor XI	Human	NS0	2460-SE-010	10 µg
	EG-VEGF/PK1	Mouse	NS0	2464-EV-025	25 µg
	Endocan	Mouse	NS0	1999-EC-050	50 µg
	FGF-12	Human	*E. coli*	2246-FG-025	25 µg
	Flt-3 Ligand	Feline	NS0	2467-FL-025	25 µg
●	GITR/TNFRSF18/Fc Chimera	Mouse	NS0	524-GR-002	2 µg
❖	Granzyme B	Mouse	NS0	1865-SE-010	10 µg
❖	Granzyme H	Human	NS0	1377-SE-010	10 µg
	HSP70	Human	*E. coli*	1663-HS-050	50 µg
	Iduronate 2-Sulfatase	Human	NS0	2449-SU-020	20 µg
		Mouse	NS0	2486-SU-020	20 µg
	IGFBP-rp1/IGFBP-7	Mouse	SFS	2120-B7-025	25 µg
	IGF-II R	Human	NS0	2447-GR-050	50 µg
	IL-1 R rp2/IL-1 R6/Fc Chimera	Mouse	NS0	2354-RP-100	100 µg
	IL-1ra/IL-1F3	Equine	*E. coli*	2466-RA-050	50 µg
	IL-2	Bovine	*E. coli*	2465-BL-020	20 µg
	IL-3	Rat	*E. coli*	2524-RL-025	25 µg
	IL-4	Bovine	*E. coli*	2469-BL-025	25 µg
	IL-5	Bovine	NS0	2525-BL-025	25 µg
		Equine	*E. coli*	2470-EL-025	25 µg
	IL-27	Human	NS0	2526-IL-010	10 µg
❖	Insulysin/IDE	Human	NS0	2496-ZN-010	10 µg
❖	Plasma Kallikrein/KLKB1	Human	NS0	2497-SE-010	10 µg
		Mouse	NS0	2498-SE-010	10 µg
❍	Layilin	Human	NS0	2536-LA-025	25 µg
❖	MMP-12	Human	NS0	917-MP-010	10 µg
	Macrophage Mannose Receptor (MMR)	Human	NS0	2534-MR-050	50 µg
		Mouse	NS0	2535-MM-050	50 µg
❍	NCAM-1/CD56	Human	NS0	2408-NC-050	50 µg
	Nectin-2/CD112	Human	NS0	2229-N2-050	50 µg
	Neuropilin-2/Fc Chimera	Human	NS0	2215-N2-025*	25 µg
	NKp44/Fc Chimera	Human	NS0	2249-NK-050	50 µg
	Osteoactivin (GPNMB)/Fc Chimera	Mouse	NS0	2330-AC-050	50 µg
❖	Pappalysin-1/PAPP-A	Human	NS0	2487-ZN-020	20 µg

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● TNF Superfamily ■ Signal Transduction ❍ Adhesion Molecules/Lectins ✚ IL-10/Interferon Family
◆ Chemokines & Receptors ▲ DNA Damage & Repair ✦ TGF-β Superfamily Ligands ❖ Proteases & Inhibitors

Recombinant & Natural Proteins

Protein	Species	Source	Catalog #	Size
Repulsive Guidance Molecule A (RGM-A)	Human	NS0	2459-RM-050	50 µg
	Mouse	NS0	2458-RG-050	50 µg
❖ Serpin G1/C1 Inhibitor	Human	Plasma	2488-PI-200	200 µg
❍ Siglec-2 (CD22)/Fc Chimera	Mouse	NS0	2296-SL-050	50 µg
❖ Spinesin	Human	NS0	2495-SE-010	10 µg
SREC-II/Fc Chimera	Human	NS0	2527-SR-050	50 µg

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
● 4-1BB Ligand/TNFSF9	Human	Goat IgG	AF2295	100 µg
❖ ADAM33	Mouse	Goat IgG	AF2434	100 µg
AMIGO2	Mouse	Goat IgG	AF2374	100 µg
AMIGO3	Mouse	Goat IgG	AF2375	100 µg
Angiopoietin-like 1	Human	Goat IgG	AF2204	100 µg
■ Phospho-APP (T668)	Human/Mouse	Rabbit IgG	AF2508	100 µg
BAMBI/NMA	Mouse	Goat IgG	AF2387	100 µg
BOC	Mouse	Goat IgG	AF2385	100 µg
C1q R1/CD93	Human	Goat IgG	AF2379	100 µg
❖ Complement Component C2	Human	Goat IgG	AF1936	100 µg
Complement Component C5a	Mouse	Goat IgG	AF2150	100 µg
❍ Cadherin-11	Human	Goat IgG	AF1790	100 µg
■ CBFA2/RUNX1	Human	Goat IgG	AF2399	100 µg
CD4	Canine	Goat IgG	AF2410	100 µg
CD69	Human	Goat IgG	AF2359	100 µg
	Mouse	Goat IgG	AF2386	100 µg
❍ CDO	Mouse	Goat IgG	AF2429	100 µg
❍ CEACAM-1	Human	Goat IgG	AF2244	100 µg
▲ Phospho-Chk1 (S345)	Human	Rabbit IgG	AF2475	100 µg
❍ CHL1/L1CAM-2	Human	Goat IgG	AF2126	100 µg
❍ Contactin-4	Human	Goat IgG	AF2205	100 µg
❖ Corin *Ectodomain*	Human	Goat IgG	AF2209	100 µg
CORS26/C1qTNF3	Mouse	Goat IgG	AF2436	100 µg
CREG	Human	Goat IgG	AF2380	100 µg
CRISP-3	Human	Goat IgG	AF2397	100 µg
● DcTRAIL R1/TNFRSF23	Mouse	Goat IgG	AF2378	100 µg
Discordin Domain Receptor 1 (DDR1)	Human	Goat IgG	AF2396	100 µg
■ DEP-1/CD148	Human/Mouse/Rat	Goat IgG	AF1934	100 µg
Dkk-2	Mouse	Goat IgG	AF2435	100 µg
❖ DPP6	Human	Goat IgG	AF2360	100 µg
● DR3/TNFRSF25	Mouse	Goat IgG	AF2437	100 µg
❖ ECE-1	Human	Goat IgG	AF1784	100 µg
■ Phospho-EGF R (Y1173)	Human	Rabbit IgG	AF1095	50 µg
Endorepellin	Human	Goat IgG	AF2364	100 µg
■ Phospho-ErbB2 (Y1248)	Human	Rabbit IgG	AF1768	50 µg
Exostosin-like 2 (EXTL2)	Mouse	Goat IgG	AF2536	100 µg
● Fas/TNFRSF6	Rat	Goat IgG	AF2159	100 µg
FcRH4/IRTA1	Human	Goat IgG	AF2426	100 µg
FGF R4	Mouse	Goat IgG	AF2265	100 µg
Fibronectin	Human	Sheep IgG	AF1918	100 µg
Ficolin-2	Human	Goat IgG	AF2428	100 µg

Continued on page 4.

CORS26/C1qTNF3

The complement C1q and tumor necrosis factor related protein family (C1qTNF) comprises eight highly-conserved protein homologs (C1qTNF1 through C1qTNF8) to Adiponectin/Acrp30.[1] All of these proteins are secreted and share a similar molecular domain structure including an N-terminal signal peptide, a short variable region and a collagenous stalk followed by a C-terminal globular domain that is homologous to complement C1q.[2] The globular domain associates into homotrimers that are structurally similar to the tumor necrosis family of cytokines. Through interactions between collagenous triple helices of the trimers, hexamers and higher order oligomers of these proteins are formed. At least one member of the C1qTNF family, C1qTNF2, has been shown to have similar biological functions to Adiponectin/Acrp30 in regulating energy homeostasis.

Collagenous repeat-containing sequence of 26 kDa (CORS26) belongs to the C1qTNF family and has been designated C1qTNF3. Mouse CORS26 is synthesized as a 246 amino acid (aa) protein with a 22 aa signal peptide, and shares 98% aa sequence identity with its human homolog.[3,4] The globular domain of CORS26, also shares 27 to 73% aa sequence identity with other proteins of the C1qTNF family.[1-3] CORS26 mRNA has been detected in the developing cartilage of embryonic mice, the kidney and rib cartilage of adult mice, and in differentiated and synovial adipocytes.[3,5] Overexpression of CORS26 is mitogenic for the murine fibroblast cell line C3H10T1/2.[3] To date, the signaling receptor for CORS26 has not been identified.

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CRACC/SLAMF7

The SLAM family consists of nine CD2-related cell surface receptors that regulate the function of several immune cell types.[1,2] The group is named for its prototypical member, signaling lymphocyte activation molecule (SLAM, also known as SLAM family member 1 or SLAMF1). Other members of the group include CD48/SLAMF2, CD229/SLAMF3 (LY9), 2B4/SLAMF4 (CD244), CD84/SLAMF5, NTB-A/SLAMF6 (SF2000), CRACC/SLAMF7 (CS1), BLAME/SLAMF8, and SLAMF9 (CD2F-10, SF2001).[3,4]

Most SLAM family members have two extracellular Ig-like domains and phosphorylated tyrosine residues within their cytoplasmic domains that are required for association with signaling proteins.[2,3] This receptor family associates with two closely related cytoplasmic proteins, SAP and EAT-2.[5] Mutations in SAP lead to X-linked lymphoproliferative syndrome (XLP) underscoring the importance of this family.[3,6]

CRACC (CD2-like receptor activating cytotoxic cells),[7] also known as CS1,[8] 19A,[9] and novel LY9,[10] has a structure typical of SLAM family members. It is expressed on nearly all NK cells, many T cells, and is strongly upregulated upon activation of B cells and dendritic cells.[7] CRACC displays homotypic binding,[8,9] and engagement by either anti-CRACC monoclonal antibody or a CRACC-Ig fusion protein activates lytic activity of NK cells.[7,8] Although one group reported binding of SAP to human CRACC,[10] a second group found that CRACC-dependent NK cytolytic activity was unaffected in NK cells from SAP-deficient XLP patients and that SAP was not co-immunoprecipitated with CRACC.[7]

References

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Polyclonal Antibodies

	Antibody	Species	Type	Catalog #	Size
	Continued from page 3.				
	Ficolin-3	Human	Goat IgG	AF2367	100 µg
■	**FosB/GOS3**	Human	Goat IgG	AF2214	100 µg
	Frizzled-9	Mouse	Goat IgG	AF2440	100 µg
	GASP-1	Human	Goat IgG	AF2070	100 µg
	Glypican 2	Human	Goat IgG	AF2304	100 µg
	Glypican 3	Human	Sheep IgG	AF2119	100 µg
	HGF	Mouse	Goat IgG	AF2207	100 µg
■	**HNF-3β**	Human	Goat IgG	AF2400	100 µg
	IL-1F9/IL-1 H1	Human	Goat IgG	AF2320	100 µg
	IL-1F10/IL-1HY2	Human	Goat IgG	AF2427	100 µg
	IL-2 Rα	Mouse	Goat IgG	AF2438	100 µg
	IL-4	Equine	Goat IgG	AF1809	100 µg
✚	**IL-10**	Equine	Goat IgG	AF1605	100 µg
	IL-12	Rat	Goat IgG	AF1760	100 µg
	IL-12 Rβ2	Human	Goat IgG	AF1959	100 µg
	IL-13	Rat	Goat IgG	AF1945	100 µg
	IL-17F	Mouse	Goat IgG	AF2057	100 µg
	ILT3/CD85k	Human	Goat IgG	AF2425	100 µg
■	**Phospho-INS R (Y1162/Y1163)/ IGF-IR (Y1135/Y1136)**	Human	Rabbit IgG	AF2507	50 µg
❍	**Integrin β3 (CD61)**	Human	Goat IgG	AF2266	100 µg
❍	**Integrin β6**	Mouse	Goat IgG	AF2389	100 µg
	LRP-1	Human	Goat IgG	AF2368	100 µg
	LRP-6	Human	Goat IgG	AF1505	100 µg
❍	**Mannose Binding Lectin (MBL)**	Human	Goat IgG	AF2307	100 µg
❍	**Mannose Binding Lectin 2 (MBL-2)**	Mouse	Goat IgG	AF2208	100 µg
❖	**Complement MASP3** *Catalytic Domain*	Human	Goat IgG	AF1724	100 µg
❍	**MDL-1/CLECSF5**	Human	Goat IgG	AF2384	100 µg
■	**Phospho-MEK1 (S218/S222)/ MEK2 (S222/S226)**	Human/Mouse/Rat	Rabbit IgG	AF2506	100 µg
❖	**MMP-16/MT3-MMP**	Human	Goat IgG	AF1785	100 µg
	MOG	Human	Goat IgG	AF2395	100 µg
		Mouse	Goat IgG	AF2439	100 µg
■	**MSK1**	Human/Mouse	Goat IgG	AF2518	100 µg
	Netrin-4	Mouse	Goat IgG	AF1132*	100 µg
	NKX2.5	Human	Goat IgG	AF2444	100 µg
▲	**nNOS**	Human	Goat IgG	AF2416	100 µg
❍	**NrCAM**	Human	Goat IgG	AF2034	100 µg
	Nurr1/NR4A2	Mouse	Goat IgG	AF2156	100 µg
	Olig1	Human	Goat IgG	AF2417	100 µg
	Olig2	Human	Goat IgG	AF2418	100 µg
	Olig3	Human	Goat IgG	AF2356	100 µg
	Osteoactivin/GPNMB	Mouse	Goat IgG	AF2330	100 µg
	PDGF-C	Mouse	Goat IgG	AF1447	100 µg
■	**Phospho-PDGF Rα (Y742)**	Human	Rabbit IgG	AF2114	50 µg
	PDX-1	Human	Goat IgG	AF2419	100 µg
	Pentraxin 2/SAP	Rat	Goat IgG	AF1895	100 µg
✦	**Persephin**	Human	Goat IgG	AF2388	100 µg
	Protein Related to Dan and Cerberus (PRDC)	Mouse	Goat IgG	AF2069	100 µg

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● TNF Superfamily ■ Signal Transduction ❍ Adhesion Molecules/Lectins ✚ IL-10/Interferon Family
◆ Chemokines & Receptors ▲ DNA Damage & Repair ✦ TGF-β Superfamily Ligands ❖ Proteases & Inhibitors

Polyclonal Antibodies

Antibody	Species	Type	Catalog #	Size
Progranulin	Human	Goat IgG	AF2420	100 µg
Resistin	Human	Goat IgG	AF1359	100 µg
Repulsive Guidance Molecule A (RGM-A)	Human	Goat IgG	AF2459	100 µg
	Mouse	Goat IgG	AF2458	100 µg
ROBO4	Human	Goat IgG	AF2366	100 µg
S100A10	Mouse	Goat IgG	AF2377	100 µg
SDNSF/MCFD2	Human	Goat IgG	AF2357	100 µg
Semaphorin 6C	Mouse	Goat IgG	AF2108	100 µg
❍ Siglec-2	Mouse	Goat IgG	AF2296	100 µg
■ Smad5	Human	Goat IgG	AF2250	100 µg
SREC-I	Human	Goat IgG	AF2409	100 µg
Thrombospondin-4	Human	Goat IgG	AF2390	100 µg
TIM-3	Human	Goat IgG	AF2365	100 µg
❖ Trappin-2/Elafin	Human	Goat IgG	AF1747	100 µg
TREML1/TLT-1	Human	Goat IgG	AF2394	100 µg
	Mouse	Goat IgG	AF2424	100 µg
❖ Tryptase α/TPS1	Human	Goat IgG	AF2370	100 µg
❖ Tryptase γ-1/TPSG1	Human	Goat IgG	AF1667	100 µg
TSG-6	Mouse	Goat IgG	AF2326	100 µg
❖ TSP50	Human	Goat IgG	AF2430	100 µg
	Mouse	Goat IgG	AF2455	100 µg
Vasorin	Human	Goat IgG	AF2140	100 µg

Monoclonal Antibodies

Antibody	Species	Clone	Catalog #	Size
❖ ACE-2 *Ectodomain*	Human	171608	MAB9331	100 µg
■ Akt *Pan Specific*	Human/Mouse/Rat	281046	MAB2055	100 µg
Amnionless	Human	260808	MAB1860	100 µg
❍ BCAM	Human	87207	MAB1481	500 µg
BLAME/SLAMF8	Mouse	250010	MAB1907	100 µg
❖ BMP-1/PCP	Human	264822	MAB1927	500 µg
✦ Pro-BMP-2	Human	253717	MAB2260	500 µg
✦ BMPR-IA	Human	87933	MAB2406	500 µg
✦ BMPR-II	Human	82609	MAB8111	500 µg
❖ Cathepsin F	Mouse	192204	MAB2544	500 µg
❖ Cathepsin V	Human	182016	MAB1080	500 µg
❖ Cathepsin X/Z/P	Human	163702	MAB934	500 µg
❖ Cathepsin-like Protease	Insect	193720	MAB2259	500 µg
■ CBFA2/RUNX1	Human/Mouse	255019	MAB2399	100 µg
◆ CCL8/MCP-2	Mouse	146123	MAB790	500 µg
◆ CCR9	Mouse	242503	MAB2160	500 µg
CD38	Human	240742	MAB2404	500 µg
❍ CD58/LFA-3	Human	248310	MAB1689	500 µg
▲ Chk2	Mouse	235303	MAB22851	100 µg
◆ CINC-1	Rat	251021	MAB515	500 µg
❖ Corin *Ectodomain*	Human	231443	MAB2209	500 µg
CRACC/SLAMF7	Human	235614	MAB1906	500 µg
CRIM1	Human	253511	MAB1917	500 µg
❖ Cystatin A	Human	224705	MAB1407	500 µg
❖ Cystatin B	Mouse	227807	MAB14091	500 µg

Continued on page 6.

Repulsive Guidance Molecule (RGM)

Repulsive guidance molecule (RGM) is a membrane-associated glycoprotein originally isolated as an axon guidance molecule in the visual system. RGM is expressed in an increasing anterior to posterior gradient in the tectum. *In vitro* analysis with retinal explants demonstrates that RGM induces collapse of temporal, but not nasal, growth cones and repels temporal retinal axons in a stripe assay, thus its repulsive and axon-specific guiding activity may be important in the development of retinotectal projections.[1]

Neogenin, a netrin-binding protein, interacts with RGM with high affinity. Like RGM, Neogenin is expressed in the CNS early in development and in a gradient across the embryonic chicken retina. Both an anti-Neogenin antibody and soluble Neogenin ectodomain block RGM-mediated avoidance of chicken temporal retinal axons. Normally unresponsive to RGM, dorsal root ganglion cells become responsive in the presence of Neogenin. These data suggest that Neogenin acts as a functional RGM receptor.[2]

RGM/Neogenin interactions also play a role in cell survival. Perturbation of gene expression in the developing neural tube of chick embryos show that Neogenin induces cell death, and its ligand, RGM, blocks the pro-apoptotic activity of Neogenin.[3]

Three mouse and three human orthologs of chicken *RGM* have been identified as *RGMa*, *RGMb*, and *RGMc*,[5] with *RGMa* displaying the greatest degree of similarity to *RGM*. *RGMa* and *RGMb* are expressed in the CNS and *RGMc* is mainly expressed in skeletal muscles. *RGMa* gene function is required for neural tube closure in early embryonic development of mouse.[4]

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Sulfatases

Sulfatases belong to a highly conserved family of enzymes that catalyze the hydrolysis of O- and N-sulfate esters from a variety of substrates.[1,2] Among the 16 known human sulfatase genes, about one third are found in lysosomes and remove sulfate from glycosaminoglycans (GAGs), glycopeptides and glycolipids. The remaining enzymes are found in microsomes, endoplasmic reticulum (ER), Golgi, and on the cell surface or are secreted.[3] Deficiencies of lysosomal sulfatases account for mucopolysaccharidoses (MPS) and metachromatic leukodystrophy, while deficiencies in non-lysosomal sulfatases cause X-linked ichthyosis (XLI) and chondrodysplasia punctata.[4]

Mammalian sulfatases have a common CXPXR motif, in which the Cys residue is post-translationally modified to a C_{α}-formylglycine (FGly) residue. This modification is essential for catalytic activity of all sulfatases and is catalyzed by FGly generating enzyme (FGE) encoded by sulfatase modifying factor (SUMF).[5-8] FGE deficiency is the cause of multiple sulfatase deficiency (MSD), a rare autosomal recessive disorder.

Iduronate 2-sulfatase (IDS) is required for the lysosomal degradation of heparan sulfate and dermatan sulfate.[2,4] It hydrolyzes the 2-sulfate group of the L-iduronate 2-sulfate units of the GAG. IDS deficiency results in MPS II or Hunter syndrome, an X-linked inborn error leading to lysosomal accumulation of the GAGs and their excretion in urine. The deduced amino acid (aa) sequence of human IDS consists of a signal peptide (aa 1 to 25), a pro peptide (aa 26 to 33) and a mature chain (aa 34 to 550) that may be further processed into the 42 kDa chain (aa 34 to 455) and the 14 kDa chain (aa 456 to 550).[9] *R&D Systems' recombinant human IDS corresponds to the single chain form and demonstrates sulfatase activity using nitrocatechol sulfate as a substrate.*

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Monoclonal Antibodies

	Antibody	Species	Clone	Catalog #	Size
	Continued from page 5.				
❖	**Cystatin/Stefin Homolog**	Mouse	263423	MAB1710	500 µg
	Dkk-1	Human	141134	MAB10961	50 µg
		Human	141134	MAB10961	500 µg
	DLL1	Human	251127	MAB1818	500 µg
❖	**DPPIV/CD26**	Human	222113	MAB1180	500 µg
	EG-VEGF/PK1	Human/Mouse/Rat	239727	MAB2100	500 µg
	EN-RAGE	Human	161215	MAB1052	500 µg
	ErbB4	Human	182818	MAB11311	100 µg
❖	**Complement Factor D**	Human	255706	MAB1824	500 µg
	Fcγ RIIB/CD32b	Mouse	190907	MAB14601	500 µg
	Fcγ RIIIA/B (CD16a/b)	Human	245536	MAB2546	500 µg
	Fcγ RIIIB/CD16b	Human	245514	MAB1597	500 µg
	FGF-3	Human	254625	MAB1206	500 µg
	FGF-20	Human	272317	MAB2547	100 µg
	Follistatin-like 1	Human	229007	MAB1694	500 µg
		Mouse/Rat	228208	MAB17381	100 µg
❖	**Furin**	Human	222728	MAB15031	500 µg
✦	**GFRα-1**	Human	260714	MAB7141	100 µg
❖	**Granzyme B**	Mouse	216315	MAB1865	500 µg
	Growth Hormone	Rat	222517	MAB15661	500 µg
■	**GSK-3β**	Human/Mouse/Rat	272536	MAB2506	100 µg
	Hepatoma-derived Growth Factor Related Protein 1 (HRP-1)	Mouse	249308	MAB1868	500 µg
◆	**Human Chemokine Receptor (HCR)**	Human	152211	MAB2350	500 µg
✚	**IFN-α/β R2**	Mouse	237526	MAB1083	500 µg
	IL-1 RII	Mouse	130817	MAB563	500 µg
	IL-1 R4/ST2	Mouse	245714	MAB1004	500 µg
	IL-1F7/FIL-1ζ	Human	261506	MAB1975	500 µg
	IL-2 Rβ	Human	27311	MAB2241	500 µg
		Mouse	130122	MAB5891	500 µg
	IL-5	Human	22026	MAB2052	500 µg
	IL-6	Canine	247017	MAB1609	500 µg
		Canine	247002	MAB16091	500 µg
	IL-7 Rα	Mouse	132215	MAB7472	500 µg
	IL-15	Mouse	201136	MAB447	500 µg
	IL-17 R	Mouse	105828	MAB448	500 µg
	IL-17B R	Mouse	152309	MAB10401	500 µg
	IL-17D	Human	246002	MAB1504	500 µg
	IL-18 BPa	Human	136031	MAB1192	500 µg
✚	**IL-20**	Mouse	176027	MAB12041	500 µg
✚	**IL-26/AK155**	Human	197505	MAB1375	500 µg
✚	**IL-29/IFN-λ1**	Human	247802	MAB1598	500 µg
❍	**Integrin α2/CD49b**	Mouse	235033	MAB1740	100 µg
❍	**Integrin α4/CD49d**	Mouse	265329	MAB2450	100 µg
❍	**Integrin α5/CD49e**	Human	238320	MAB18641	500 µg
❍	**Integrin αV/CD51**	Human	273210	MAB12191	100 µg
❍	**Integrin β1/CD29**	Mouse	265927	MAB2405	100 µg
❍	**Integrin β6**	Mouse	268622	MAB2389	100 µg
■	**JNK1**	Human/Mouse/Rat	228601	MAB17761	100 µg
❖	**Kallikrein 15**	Human	252819	MAB2540	500 µg
❖	**Kininogen**	Human	236006	MAB15691	500 µg
		Human	236012	MAB15692	500 µg
	KIR2DL4	Human	181703	MAB2238	500 µg
	Kremen-1	Mouse	252525	MAB1647	500 µg

● TNF Superfamily ■ Signal Transduction ❍ Adhesion Molecules/Lectins ✚ IL-10/Interferon Family
◆ Chemokines & Receptors ▲ DNA Damage & Repair ✦ TGF-β Superfamily Ligands ❖ Proteases & Inhibitors

Monoclonal Antibodies

	Antibody	Species	Clone	Catalog #	Size
	LIMPII/SR-B2 *Lumenal Loop*	Human	235903	MAB1966	500 µg
●	**Lymphotoxin βR/TNFRSF3**	Mouse	157108	MAB10081	500 µg
	LYVE-1	Mouse	223322	MAB2125	500 µg
❖	**Marapsin/Pancreasin**	Mouse	246407	MAB1989	500 µg
❖	**Complement MASP3**	Human	254818	MAB1724	500 µg
❍	**MDL-1/CLECSF5**	Mouse	226402	MAB1639	500 µg
	NKp44	Human	253422	MAB2249	100 µg
	NKp46/MAR-1	Mouse	259018	MAB2225	100 µg
	NKp80/KLRF1	Human	239127	MAB1900	500 µg
	NRG1/HRG1	Human	147724	MAB377	500 µg
	Olig1	Human	257219	MAB2417	100 µg
	Olig3	Human/Mouse	257934	MAB2456	100 µg
	OMgp	Human/Mouse	240527	MAB1674	500 µg
	OSCAR	Human	259501	MAB2004	500 µg
▲■	**Phospho-p53 (S15)**	Human	261366	MAB18391	100 µg
❖	**Pappalysin-2/PAPP-A2**	Human	242011	MAB1668	500 µg
	Pax3	Human/Mouse	274212	MAB2457	100 µg
❖	**PCPE**	Mouse	261845	MAB2239	500 µg
	PDX-1	Human/Mouse	267712	MAB2419	100 µg
✦	**Persephin**	Mouse	240839	MAB2479	500 µg
	Prolactin R	Human	250448	MAB1167	500 µg
●	**RANK/TNFRSF11A**	Human	80707	MAB6831	500 µg
	Reg IIIα	Rat	250802	MAB1745	500 µg
●	**RELT/TNFRSF19L**	Human	238104	MAB1385	500 µg
	ROBO1	Rat	243716	MAB1749	500 µg
	ROBO4	Human	265703	MAB2454	100 µg
	SCGF	Human	239029	MAB1904	500 µg
	Semaphorin 3C	Mouse	238835	MAB1728	500 µg
	Semaphorin 6B	Mouse	256537	MAB2264	500 µg
	Semaphorin 6C	Human	254506	MAB2219	500 µg
❖	**Serpin A1**	Human	202808	MAB1268	500 µg
❖	**Serpin E2**	Mouse	244404	MAB2175	500 µg
❖	**Serpin I2**	Human	203402	MAB2235	500 µg
❍	**Siglec-F**	Mouse	238023	MAB1706	500 µg
■	**Smad4**	Human	253343	MAB2097	100 µg
		Human/Mouse	253327	MAB20971	100 µg
	SOST	Mouse	248121	MAB1589	500 µg
❖	**TACE/ADAM17** *Cytosolic*	Human	136121	MAB2129	500 µg
		Human	136133	MAB21291	500 µg
❖	**TFPI-2**	Human	243220	MAB2545	500 µg
		Human	243227	MAB25451	500 µg
	Thrombospondin-2	Human	230934	MAB1635	500 µg
◆	**Thymus Chemokine-1**	Mouse	159703	MAB10911	500 µg
	TMEFF1	Human	249511	MAB1919	500 µg
❖	**Tryptase α/TPS1**	Human	274001	MAB2370	100 µg
❖	**Tryptase ε/BSSP-4**	Mouse	246744	MAB2059	500 µg
	TSG-6	Human/Mouse	259820	MAB2104	100 µg
	TSLP	Mouse	152640	MAB5551	500 µg
❖	**TSP50**	Mouse	260514	MAB2455	500 µg
■	**Vacccina Virus VH1-related Phosphatase (VHR)**	Human	237018	MAB16541	100 µg
	VASA	Human	246904	MAB2030	500 µg
	VEGF	Canine	247109	MAB1603	500 µg
	WISP-1/CCN4	Human	213611	MAB1627	500 µg
	Wnt-8a	Mouse	254126	MAB2248	500 µg

Insulysin

Insulysin, also known as insulin-degrading enzyme (IDE), is a zinc metallopeptidase of the inverzincin family. IDE is primarily located in the cytosol, but has been detected as a secreted enzyme and is associated with the plasma membrane as well.[1] The enzyme is expressed in many tissues, with highest levels in liver, kidney, brain, and testis.[2] IDE hydrolyzes a variety of regulatory peptides, including insulin, glucagon, atrial natriuretic factor, and TGF-α *in vitro*.[1] In addition, IDE has been shown to degrade the amyloid β (Aβ) peptide, which polymerizes into the plaques associated with Alzheimer's disease.[3]

Recent studies have provided evidence that deficiencies in IDE activity contribute to the pathogenesis of type 2 diabetes mellitus (DM2) and Alzheimer's disease. The IDE region of human chromosome 10q has been linked to DM2.[4] When the IDE gene was specifically disrupted in mice, $IDE^{-/-}$ animals developed hyperinsulinemia and glucose intolerance, characteristic of DM2.[5] $IDE^{-/-}$ mice were also shown to have a significant decrease in Aβ degradation in the brain, resulting in increased cerebral accumulation of Aβ peptide. This *in vivo* evidence is consistent with the hypotheses that IDE is important for the degradation of insulin in cells and for the clearance of Aβ peptide in the brain.

R&D Systems now offers recombinant human Insulysin (residues 42-1019). The enzyme is expressed in Spodoptera frugiperda *insect cells with an N-terminal polyhistidine tag (Catalog # 2496-ZN). Purified recombinant Insulysin peptidase activity can be measured using R&D Systems' Mca-RPPGFSAFK(Dnp)-OH fluorogenic substrate (Catalog # ES005).*

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NCAM-1

Neural cell adhesion molecule 1 (NCAM-1), also known as CD56, is a member of the Ig superfamily of cell adhesion molecules (CAMs). It has several putative functions including regulating cell adhesion, axon branching and fasciculation, cell migration, synaptogenesis, and synaptic plasticity.[1] NCAM-1 is found primarily in three alternatively spliced forms designated by their molecular weight: NCAM-120, NCAM-140, and NCAM-180.[1] All three contain an extracellular domain consisting of five Ig repeats, and two Fibronectin Type III modules located proximal to the membrane. NCAM-120 is linked to the membrane via glycosylphosphatidylinositol (GPI) linkage, while NCAM-140 and NCAM-180 are transmembrane proteins with intracellular domains of different lengths. NCAM-1 may also be post translationally modified through the addition of α,2,8-polysialic acid (PSA) chains to the fifth Ig repeat. This modification appears predominantly during development and, in general, decreases the adhesive properties of NCAM-1.[1,2]

NCAM-1 activities are mediated via either homophilic or heterophilic binding. Homophilic interactions are thought to occur either in cis or trans configuration, and NCAM-1 is able to elicit signaling cascades that include activation of the tyrosine kinases Fyn and FAK.[1,3] Heterophilic binding partners include heparan and chondroitin sulfate proteoglycans, Collagens, and other Ig CAMs such as NCAM-L1 and Tag-1/Axonin-1.[4-7] NCAM-1 also interacts with certain growth/trophic factors and their receptors. For instance, it stimulates neurite outgrowth through the binding and activation of FGF receptors.[8,9] In addition, members of the GDNF family and their GFRα receptors bind NCAM-1, and GDNF is capable of inducing NCAM-1-mediated signal transduction and neurite outgrowth.[10]

References

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Labeled Antibodies

Biotinylated Antibodies

	Antibody	Species	Type	Catalog #	Size
	AMIGO2	Mouse	Goat IgG	BAF2374	50 µg
	AMIGO3	Mouse	Goat IgG	BAF2375	50 µg
	Complement C5a	Mouse	Goat IgG	BAF2150	50 µg
❍	Cadherin-4/R-Cadherin	Human	Goat IgG	BAF2217	50 µg
❍	E-Cadherin	Human	Mouse IgG_{2B}	BAM18381	100 µg
■	CBFA2/RUNX1	Human	Goat IgG	BAF2399	50 µg
	CD69	Human	Goat IgG	BAF2359	50 µg
❍	CEACAM-1	Human	Goat IgG	BAF2244	50 µg
❖	Cystatin SN	Human	Goat IgG	BAF1285	50 µg
	Dkk-1	Mouse	Goat IgG	BAF1765	50 µg
	DNER	Mouse	Goat IgG	BAF2254	50 µg
❖	DPP6	Human	Goat IgG	BAF2360	50 µg
❖	ECE-1	Human	Goat IgG	BAF1784	50 µg
	EGF	Mouse	Goat IgG	BAF2028	50 µg
	EG-VEGF/PK1	Rat	Goat IgG	BAF2100	50 µg
	EPCR	Human	Goat IgG	BAF2245	50 µg
	FABP5	Mouse	Goat IgG	BAF1476	50 µg
	FGF R4	Mouse	Goat IgG	BAF2265	50 µg
	Follistatin-like 1	Human	Goat IgG	BAF1694	50 µg
❍	Galectin-1	Mouse	Rat IgG_{2B}	BAM12451	250 µg
	IL-2	Canine	Goat IgG	BAF1815	50 µg
		Feline	Goat IgG	BAF1890	50 µg
	IL-12 Rβ2	Human	Goat IgG	BAF1959	50 µg
	IL-13	Rat	Goat IgG	BAF1945	50 µg
✚	IL-20 Rα	Mouse	Goat IgG	BAF1736	50 µg
	ILT2/CD85j	Human	Goat IgG	BAF2017	50 µg
	Insulin R/CD220	Human	Mouse IgG_{2B}	BAM1544	100 µg
❍	Integrin β3	Human	Goat IgG	BAF2266	50 µg
	LAMP	Human	Goat IgG	BAF873	50 µg
	LDL R	Mouse	Goat IgG	BAF2255	50 µg
❖	Lipocalin-2/NGAL	Human	Goat IgG	BAF1757	50 µg
	LOX-1/SR-E1	Mouse	Goat IgG	BAF1564	50 µg
	LYVE-1	Mouse	Goat IgG	BAF2125	50 µg
❍	Mannose Binding Lectin-2 (MBL-2)	Mouse	Goat IgG	BAF2208	50 µg
❖	Complement MASP3 *Catalytic Domain*	Human	Goat IgG	BAF1724	50 µg
❍	MDL-1/CLECSF5	Mouse	Goat IgG	BAF1639	50 µg
	Neogenin	Mouse	Goat IgG	BAF1079*	50 µg
	NKp44	Human	Goat IgG	BAF2249	50 µg
❍	NrCAM	Human	Goat IgG	BAF2034	50 µg
	Olig1	Human	Goat IgG	BAF2417	50 µg
	Olig2	Human	Goat IgG	BAF2418	50 µg
	Olig3	Human	Goat IgG	BAF2356	50 µg
	Pentraxin 2/SAP	Rat	Goat IgG	BAF1895	50 µg
	ROBO4	Human	Goat IgG	BAF2366	50 µg
❖	Serpin E1/PAI-1	Human	Goat IgG	BAF1786	50 µg
❍	Siglec-3/CD33	Mouse	Goat IgG	BAF2220	50 µg
■	Smad4	Human	Goat IgG	BAF2097	50 µg
	SR-A1/MSR1	Mouse	Goat IgG	BAF1797	50 µg
	SREC-I	Human	Goat IgG	BAF2409	50 µg
	TIM-3	Human	Goat IgG	BAF2365	50 µg

● TNF Superfamily ■ Signal Transduction ❍ Adhesion Molecules/Lectins ✚ IL-10/Interferon Family
◆ Chemokines & Receptors ▲ DNA Damage & Repair ✦ TGF-β Superfamily Ligands ❖ Proteases & Inhibitors

Labeled Antibodies

Biotinylated Antibodies

	Antibody	Species	Type	Catalog #	Size
❖	Trappin-2/Elafin	Human	Goat IgG	BAF1747	50 µg
	TREM-3	Mouse	Goat IgG	BAF2224	50 µg
❖	Tryptase α/TPS1	Human	Goat IgG	BAF2370	50 µg
❖	Tryptase γ-1/TPSG1	Human	Goat IgG	BAF1667	50 µg
	UNC5H1	Rat	Goat IgG	BAF1405*	50 µg
	VEGF	Zebrafish	Goat IgG	BAF1247	50 µg

Cell Surface Staining Antibodies

	Antibody	Species	Label	Catalog #	Size
	A2B5	Human/Mouse/Rat/Chicken	PE	FAB1416P	100 Tests
❍	VE-Cadherin	Human	PE	FAB9381P	100 Tests
◆	CCR9	Human	APC	FAB1791A	100 Tests
		Mouse	APC	FAB2160A	100 Tests
		Mouse	Fluorescein	FAB2160F	100 Tests
		Mouse	PE	FAB2160P	100 Tests
◆	CD45	Human	APC	FAB1430A	100 Tests
		Human	PE	FAB1430P	100 Tests
	CD90/Thy1	Human	APC	FAB2067A	100 Tests
		Human	PE	FAB2067P	100 Tests
	CRACC/SLAMF7	Human	APC	FAB1906A	100 Tests
		Human	PE	FAB1906P	100 Tests
	CTLA-4	Human	PE	FAB325P	100 Tests
	Flt-3 (Flk-2)	Human	Fluorescein	FAB812F	100 Tests
		Human	PE	FAB812P	100 Tests
	GM-CSF Rα	Human	APC	FAB706A	100 Tests
		Human	PE	FAB706P	100 Tests
●	HVEM/TNFRSF14	Human	APC	FAB356A	100 Tests
❍	Integrin α5/CD49e	Human	PE	FAB1864P	100 Tests
❍	Integrin α6/CD49f	Human/Mouse/Bovine	APC	FAB13501A	100 Tests
		Human/Mouse/Bovine	PE	FAB13501P	100 Tests
❍	Integrin αX/CD11c	Human	Fluorescein	FAB1777F	100 Tests
		Human	PE	FAB1777P	100 Tests
❍	Integrin β3/CD61	Human	APC	FAB2266A	100 Tests
		Human	PE	FAB2266P	100 Tests
	NKp46	Human	PE	FAB1850P	100 Tests
	SCF R/c-kit	Human	APC	FAB332A	100 Tests
		Human	PE	FAB332P	100 Tests
	TER-119	Mouse	PE	FAB1125P	100 Tests
●	TRAIL/TNFSF10	Human	PE	FAB687P	100 Tests

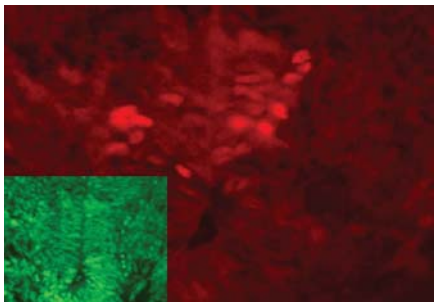
Intracellular Staining Antibodies

	Antibody	Species	Label	Catalog #	Size
❖	Furin	Human	APC	IC1503A	100 Tests
		Human	PE	IC1503P	100 Tests
	Nestin	Human	PE	IC1259P	100 Tests
	SOX2	Human	PE	IC2018P	100 Tests

These products are covered under one or more patents owned by the Regents of the University of California.

Olig1, Olig2, and Olig3

The Olig family is a novel subfamily of basic helix-loop-helix transcription factors. Olig1 and Olig2 are expressed in the motor neuron progenitor (pMN) domain of the spinal cord, a region that gives rise to both motor neurons and oligodendrocytes. Olig1 is involved in the development and maturation of oligodendrocytes, while Olig2 is required for both oligodendrocyte and motor neuron specification.[1,2] Interaction between Olig2 and the homeodomain transcription factor Nkx2.2 is required to establish the pMN-p3 boundary in the developing spinal cord.[3] In addition to their utilization as oligodendrocyte progenitor cell markers, Olig1 and Olig2 are expressed by tumors derived from both the oligodendrocyte and astrocyte lineages.[4] Olig3, the most recently isolated member of Olig family, is transiently expressed in several different types of central nervous system progenitor cells and then disappears in the course of development.[5] Olig3 expression does not overlap with Olig2 in the embryonic neural tube, and its function is unknown.[5]



Detection of Olig2 in human fetal brain tissues using R&D Systems' goat anti-human/mouse Olig2 affinity-purified polyclonal antibody (Catalog # AF2418). Tissue sections were stained using a Rhodamine Red-conjugated donkey anti-goat secondary antibody and counterstained using Fluoro Nissl (inset).

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Two Families of Aminopeptidases

Aminopeptidases (APs) play an important role in protein processing by removing amino acid (aa) residues from an unsubstituted N-terminus of proteins and peptides. APs can remove one, two (dipeptidyl-peptidase) or three aa residues (tripeptidyl-peptidase) at a time. The human genome encodes approximately 40 proteins that may have AP activity, and they belong to the classes of cysteine, metallo- and serine proteases.[1,2] More than half of the proteins are members of two families of metalloproteases, M01 and M24. The names of these APs often reflect their substrate specificity, cellular localization, and sensitivity to inhibitors or other regulators.[3]

Protein	Gene Name
Aminopeptidase A	ENPEP
Aminopeptidase B	RNPEP
Aminopeptidase N	ANPEP
Aminopeptidase PS	NPEPPS
Aminopeptidase PILS	ARTS1
Aminopeptidase B-like 1	REPEPL1
Aminopeptidase O	C9ORF3
Laeverin	FLJ90650
Leukotriene A4 Hydrolase	LTA4H
TRH-degrading Ectoenzyme	TRHDE
Leukocyte-derived Arginine AP	LRAP
Leucyl-cystinyl AP	LNPEP
TBP-associated Factor 2	TAF2

TABLE 1. The M01 family.

Protein	Gene Name
Met Aminopeptidase 1	METAP1
Met Aminopeptidase 2	METAP2
Met Aminopeptidase 1D	MAP1D
X-Pro Aminopeptidase 2	XPNPEP2
X-Pro Dipeptidase	PEPD
Aminopeptidase P1	XPNPEP1
Aminopeptidase P Homolog	PEPP
Proliferation-associated Protein 1	PA2G4
Suppressor of Ty16 Homolog	SUPT16H

TABLE 2. The M24 family.

R&D Systems' aminopeptidases are all purified from mammalian cells that express the recombinant cDNAs. They are individually characterized with regard to assay conditions including substrate specificity as well as optimal salt and pH ranges.

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Matched Antibody Pairs

	Antibody	Species	Use	Catalog #	Size
❍	**BCAM**	Human	Capture	MAB1481	500 µg
		Human	Detection	BAF148	50 µg
		Human	Protein	148-BC-100	100 µg
❖	**DPPIV/CD26**	Mouse	Capture	MAB954	500 µg
		Mouse	Detection	BAF954	50 µg
		Mouse	Protein	954-SE-010	10 µg
	Fcγ RIIB/CD32b	Mouse	Capture	MAB14601	500 µg
		Mouse	Detection	BAF1460	50 µg
		Mouse	Protein	1460-CD-050	50 µg
	Flt-3 Ligand	Mouse	Capture	AF427	100 µg
		Mouse	Detection	BAF427	50 µg
		Mouse	Protein	427-FL-005	5 µg
●	**GITR/TNFRSF18**	Mouse	Capture	MAB524	500 µg
		Mouse	Detection	BAF524	50 µg
		Mouse	Protein	524-GR-002	2 µg
	IL-15	Mouse	Capture	MAB447	500 µg
		Mouse	Detection	BAF447	50 µg
		Mouse	Protein	447-ML-010	10 µg
	IL-17B R	Mouse	Capture	MAB10401	500 µg
		Mouse	Detection	BAF1040	50 µg
		Mouse	Protein	1040-BR-050	50 µg
	IL-18 BPa	Human	Capture	MAB1192	500 µg
		Human	Detection	BAF119	50 µg
		Human	Protein	119-BP-100	100 µg
	NRG1-β1/HRG1-β1	Human	Capture	MAB3771	500 µg
		Human	Detection	BAF377	50 µg
		Human	Protein	377-HB-050	50 µg
	Osteopontin	Mouse	Capture	AF808	100 µg
		Mouse	Detection	BAF808	50 µg
		Mouse	Protein	441-OP-050	50 µg
◆	**Thymus Chemokine-1**	Mouse	Capture	MAB10911	500 µg
		Mouse	Detection	BAF793	50 µg
		Mouse	Protein	1091-CK-025	25 µg
❖	**TIMP-4**	Human	Capture	MAB974	500 µg
		Human	Detection	BAF974	50 µg
		Human	Protein	974-TSF-010	10 µg
	TREM-1	Human	Capture	MAB1278	500 µg
		Human	Detection	BAF1278	50 µg
		Human	Protein	1278-TR-050	50 µg
		Mouse	Capture	AF1187	100 µg
		Mouse	Detection	BAF1187	50 µg
		Mouse	Protein	1187-TR-025	25 µg
	TSLP	Mouse	Capture	MAB5551	500 µg
		Mouse	Detection	BAF555	50 µg
		Mouse	Protein	555-TS-010	10 µg

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Macrophage Mannose Receptor

Macrophage Mannose Receptor (MMR) is a type I transmembrane protein that binds both endogenous and exogenous glycoproteins bearing terminal mannose, fucose, or N-acetyl glucosamine. The extracellular region consists of an N-terminal cysteine-rich domain, followed by a domain containing Fibronectin type II-like repeats, and eight carbohydrate recognition domains (CRDs). CRDs 4 and 5 act as the primary ligand-binding domains, while the cysteine-rich domain may bind glycoproteins containing sulfated N-acetyl galactosamine or galactose moieties.[1] It is preferentially expressed on tissue macrophages, a subset of myeloid dendritic cells, and is also found on lymphatic and hepatic endothelial cells.[1] It is upregulated by cytokines including IL-10, IL-4, and IL-13.[1-3]

MMR is potentially involved in several homeostatic processes. It is recognized for its putative role in the endocytic clearance of host-derived glycoproteins.[4] It has also been implicated as an adhesion molecule, binding L-selectin and modulating the association of lymphocytes with the lymphatic endothelium.[5] MMR also interacts with mannose residues on a variety of microbes including bacteria, fungi, and viruses, suggesting that it could participate in immune surveillance through the recognition and uptake of pathogens.[1] However, the significance of this role *in vivo* remains unclear since MMR knockout mice do not appear to exhibit increased susceptibility to fungal infections.[6,7] The ability of MMR to efficiently internalize mannosylated antigens has led to the hypothesis that it could facilitate the process of antigen uptake and presentation. Studies show that these antigens are internalized and presented more efficiently to T cells *in vitro*, although the failure of MMR transfection to enhance processing and presentation in fibroblasts suggests that questions may still remain.[8-10]

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DuoSet® IC Phospho-Akt (S473) Pan Specific ELISA

Akt, also known as protein kinase B (PKB), is a central kinase in such diverse cellular processes as glucose uptake, cell cycle progression, and apoptosis. Three highly homologous members define the Akt family: Akt1 (PKBα), Akt2 (PKBβ), and Akt3 (PKBγ). Akt1 is the most ubiquitously expressed member, with Akt2 expressed predominantly in insulin target tissues, and Akt3 expressed most selectively. All three Akts contain an amino-terminal pleckstrin homology domain, a central kinase domain, and a carboxyl-terminal regulatory domain.

Akt signaling is mediated by mechanisms that activate phosphoinositide 3-kinase (PI3 K). Active PI3 K generates the second messenger phosphatidylinositol-3,4,5-trisphosphate (PIP_3), which recruits Akt to the plasma membrane for subsequent phosphorylation by PDK-1 and possibly other kinases. Phosphorylations within both the kinase (T308 of Akt1) and regulatory domains (S473 of Akt1) are necessary for full activation. Downstream Akt substrates include regulators of metabolism and apoptosis, implicating the Akts as targets for diabetes and cancer therapies.

Additional Akt Products

Antibody	Catalog #
Phospho-Akt (S473)	AF887
Phospho-Akt (T308)	AF8871
Human Akt *Pan Specific*	AF2055
Human/Mouse/Rat Akt *Pan Specific*	MAB2055
Human/Mouse/Rat Akt1	AF1775
Human/Mouse/Rat Akt1	MAB1775
Human/Mouse/Rat Akt2	AF2315
Human Akt3	MAB1463

DuoSet IC ELISA Development System	Catalog #
Phospho-Akt (S473) *Pan Specific*	DYC887
Phospho-Akt1 (S473)	DYC2289
Total Akt1	DYC1775

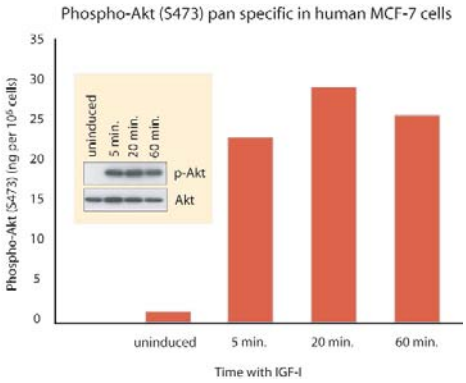

FIGURE 1 Lysates prepared from MCF-7 cells induced with IGF-I for the indicated times were quantified using R&D Systems' Phospho-Akt (S473) pan specific ELISA (Catalog # DYC887). The same lysates were also immunoblotted (inset) using either R&D Systems' anti-phospho Akt (S473) pan specific (p-Akt) (Catalog # AF887) or anti-Akt pan specific (Catalog # MAB2055) antibodies. The results using the DuoSet IC ELISA correlate well with the amounts of phosphorylated Akt detected by Western blot. The immunoblot with anti-Akt antibody indicates that total levels of Akt remained constant during the induction with IGF-I.

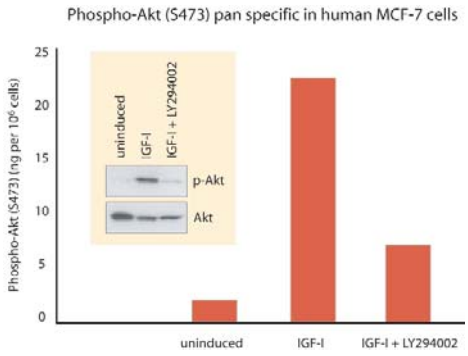

FIGURE 2 MCF-7 cells were incubated with no additions or with IGF-I for 20 minutes, either with or without the PI3 K inhibitor LY294002. Cells were lysed and phosphorylated Akt was quantified using R&D Systems' Phospho-Akt (S473) pan specific ELISA (Catalog # DYC887). The same lysates were also immunoblotted (inset) using either R&D Systems' anti-phospho Akt (S473) pan specific (p-Akt) or anti-Akt pan specific antibodies. The results using the DuoSet IC ELISA correlate well with the amounts of phosphorylated Akt detected by Western blot. The immunoblot with anti-Akt antibody indicates that total levels of Akt remained constant during the treatments.

For more information on R&D Systems' Signal Transduction products, please visit www.RnDSystems.com/Signal Trans

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