

## Human I-TAC/CXCL11 ELISA

Interferon-inducible T cell chemoattractant (I-TAC/CXCL11) is a non-ELR CXC chemokine capable of recruiting activated T cells to sites of inflammation via CXC chemokine receptor 3 (CXCR3), similar to IP-10/CXCL10 and MIG/CXCL9. I-TAC, however, binds CXCR3 with higher affinity<sup>1,2</sup> and is more potent<sup>1</sup> than either IP-10 or MIG. I-TAC expression is dramatically up-regulated in response to IFN- $\gamma$ . This effect is enhanced by the addition of TNF- $\alpha$ <sup>3</sup> or IL-1 $\beta$ ,<sup>1</sup> though these pro-inflammatory cytokines alone fail to induce I-TAC expression. The Th2-associated cytokines IL-4 and IL-10 suppress I-TAC expression.<sup>4</sup> I-TAC may play a prominent role in diseases featur-

ing activated T cells, such as allergic contact dermatitis, lichen planus, lupus erythematosus and atherosclerosis. Additionally, there is evidence that I-TAC is influential during thymus lymphopoiesis<sup>5</sup> and angiogenesis.<sup>6</sup> I-TAC can also act as an antagonist for CC chemokine receptor 3 (CCR3),<sup>7</sup> which is expressed on eosinophils and Th2 lymphocytes, suggesting that I-TAC may work to further influence T cell recruitment at sites of expression.

Bioassays for I-TAC are tedious and not specific for I-TAC. The Quantikine human I-TAC immunoassay is a 4 hour solid phase ELISA designed to measure I-TAC in serum, plasma, and cell culture supernatant.

### References

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## ELISA & Activity Assay Kits

Analyte	Species	Catalog #	Sensitivity	Range	Size
11-d-TXB <sub>2</sub>		DE3300	9.4 pg/mL	9.8-10,000 pg/mL	1 Kit
Cysteinyl Leukotriene		DE3200	.26 pg/mL	.78-2500 pg/mL	1 Kit
12(S) HETE		DE2900	.146 pg/mL	.105-50,000 pg/mL	1 Kit
15(S) HETE		DE3000	.69 pg/mL	.78-20,000 pg/mL	1 Kit
I-309/CCL1	human	DCC10	3.9 pg/mL	.78-500 pg/mL	1 Kit
Inhibin A	human	DINA0	4.44 pg/mL	.234-1500 pg/mL	1 Kit
I-TAC/CXCL11	human	DCX110	14.9 pg/mL	.625-4000 pg/mL	1 Kit
LIGHT/TNFSF14	human	DLIT00	.55 pg/mL	.312-2000 pg/mL	1 Kit
MMP-10	human	DM1000	4.13 pg/mL	.781-5000 pg/mL	1 Kit
PDGF-AA	human	DAA00	2.07 pg/mL	.312-2000 pg/mL	1 Kit
PGJ <sub>2</sub>		DE2800	.37 pg/mL	.105-200,000 pg/mL	1 Kit
P-Selectin	mouse	MPS00	0.01 ng/mL	.031-20 ng/mL	1 Kit
Superoxide Dismutase		7500-100-K	0.001 U/mL	0.001-100 pg/mL	1 Kit
TIMP-2	human	DTM200	0.01 ng/mL	.0156-10 ng/mL	1 Kit
VEGF R1 (Flt-1)	human	DVR100	5.0 pg/mL	.312-2000 pg/mL	1 Kit
	mouse	MVR100	10 pg/mL	.125-8000 pg/mL	1 Kit

Do you have 30 or more samples you would like tested?  
R&D Systems' Analytical Testing Service is a GLP compliant cytokine testing service.

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## Frizzleds

Wnt signaling is involved in a variety of developmental processes including cell fate determination, cell polarity, tissue patterning and control of cell proliferation. Members of the Frizzled family of proteins serve as receptors for Wnt signaling. The founding member of the Frizzled family was identified in *Drosophila* based on its role in tissue polarity in the adult cuticle and named for the disorganized appearance of bristle hairs on the mutant. There are currently nine murine Frizzled genes and ten human Frizzled genes identified.<sup>1</sup>

The primary structure of Frizzled proteins is similar among all family members, each containing a divergent N-terminal signal peptide, a highly conserved extracellular cysteine-rich domain, a variable-length linker region, a seven-pass transmembrane domain, and a variable-length C-terminal tail. One of the most conserved regions of the Frizzled proteins is the cysteine-rich domain (CRD) which spans approximately 120 amino acids, containing ten invariant cysteines and the Wnt binding site.<sup>2</sup>

R&D Systems now offers soluble CRD-containing extracellular domains of murine Frizzled-4 (mFrz-4) and Frizzled-8 (mFrz-8). Both mFrz-4 and mFrz-8 CRDs bind cell surface *Xenopus* Wnt-8 (Xwnt-8) protein.<sup>3</sup> In addition, the extracellular portion of Frizzled-8<sup>4</sup> and Frizzled-4<sup>5</sup> have potent antagonizing activity of Wnt signaling as assayed by inhibition of secondary axes induced by Xwnt-8 mRNA. The crystal structure of mFrz-8 CRD exhibits a dimer interface that is also present in the CRD of another Wnt antagonist, sFRP-3, and suggests that CRD dimerization may be important for Wnt signaling.<sup>6</sup>

### References

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## Recombinant Proteins

Protein	Species	Catalog #	Source	Size
<b>Amphiregulin</b>	mouse	989-AR-100	<i>E. coli</i>	100 µg
<b>Angiopoietin-1</b>	human	923-AN-025	NS0	.25 µg
<b>Angiopoietin-4</b>	human	964-AN-025	NS0	.25 µg
<b>B7-H1 (PDL1)/Fc Chimera</b>	mouse	1019-B7-100	NS0	100 µg
<b>B7-H3/Fc Chimera</b>	human	1027-B3-100	NS0	100 µg
<b>Betacellulin</b>	mouse	1025-CE-025	<i>E. coli</i>	.25 µg
<b>BMP-2a</b>	zebrafish	111-BM-010	<i>E. coli</i>	.10 µg
<b>BRAK/CXCL14</b>	human	866-CX-025	<i>E. coli</i>	.25 µg
	mouse	730-XC-025	<i>E. coli</i>	.25 µg
<b>Cadherin-8/Fc Chimera</b>	human	188-C8-005	NS0	.5 µg
<b>CC1/Fc Chimera</b>	viral	696-CNS-025	NS0	.25 µg
<b>CD27/TNFRSF7/Fc Chimera</b>	human	382-CD-100	NS0	100 µg
<b>CD30 Ligand/His Chimera</b>	human	1028-CL-050	NS0	.50 µg
<b>CXCL16</b>	human	976-CX-025	<i>E. coli</i>	.25 µg
<b>Desmoglein-1/Fc Chimera</b>	human	944-DM-100	NS0	100 µg
<b>Desmoglein-2/Fc Chimera</b>	human	947-DM-100	NS0	100 µg
<b>EDA-A2</b>	human	922-ED-010	NS0	.10 µg
<b>Eotaxin-2/CCL24</b> <i>aa 27-119</i>	mouse	1017-MP-025	<i>E. coli</i>	.25 µg
<b>Erythropoietin</b>	mouse	959-ME-010	NS0	.10 µg
<b>FGF-19</b>	human	969-FG-025	<i>E. coli</i>	.25 µg
<b>Frizzled-4/Fc Chimera</b>	mouse	194-FZ-050	NS0	.50 µg
<b>Frizzled-8/Fc Chimera</b>	mouse	112-FZ-050	NS0	.50 µg
<b>Gas 6</b>	mouse	986-GS-025	NS0	.25 µg
<b>HRG-β1</b> <i>extracellular domain</i>	human	377-HB-050	<i>E. coli</i>	.50 µg
<b>ICAM-1/Fc Chimera</b>	rat	583-IC-050	NS0	.50 µg
<b>IFN-γR1 (CDw119)</b>	mouse	1026-GR-100	NS0	100 µg
<b>IL-1β</b>	cotton rat	1009-CL-010	<i>E. coli</i>	.10 µg
<b>IL-1 R4 (ST2L)/Fc Chimera</b>	mouse	1004-MR-050	<i>Sf 21</i>	.50 µg
<b>IL-1 R6 (IL-1 R rp2)/Fc Chimera</b>	rat	573-RP-100	NS0	100 µg
<b>IL-1 R9/Fc Chimera</b>	human	1007-MR-100	NS0	100 µg
<b>IL-2</b> <i>Cys 146 Ala</i>	porcine	1015-P2-020	<i>E. coli</i>	.20 µg
<b>IL-2 Rα/Fc Chimera</b>	human	1020-RL-050	NS0	.50 µg
<b>IL-5</b>	rat	545-RL-010	<i>Sf 21</i>	.10 µg
<b>IL-10</b>	viral (HCMV)	117-VL-025	<i>E. coli</i>	.25 µg
<b>IL-10</b> <i>Cys 149 Tyr</i>	mouse	1023-ML-010	<i>E. coli</i>	.10 µg
<b>IL-18</b>	porcine	588-PL-025	<i>E. coli</i>	.25 µg
<b>IL-21 R/Fc Chimera</b>	human	991-R2-100	NS0	100 µg
<b>Lefty-1</b>	mouse	994-LF-025	NS0	.25 µg
<b>Lymphotoxin α1/β2</b>	mouse	927-LY-010	<i>Sf 21</i>	.10 µg
<b>Lymphotoxin α2/β1</b>	mouse	1008-LY-010	<i>Sf 21</i>	.10 µg
<b>MAdCAM-1/Fc Chimera</b>	mouse	993-MC-050	NS0	.50 µg
<b>MIP-1β/CCL4</b>	cotton rat	1024-MB-025	<i>E. coli</i>	.25 µg
<b>PD-1/Fc Chimera</b>	mouse	1021-PD-100	NS0	100 µg
<b>PD-L2/Fc Chimera</b>	mouse	1022-PL-100	NS0	100 µg
<b>RANTES/CCL5</b>	cotton rat	1010-CR-025	<i>E. coli</i>	.25 µg
<b>E-Selectin/Fc Chimera</b>	rat	977-ES-100	NS0	100 µg
<b>P-Selectin/Fc Chimera</b>	human	137-PS-050	NS0	.50 µg

## Recombinant Proteins

Protein	Species	Catalog #	Source	Size
SIGIRR/Fc Chimera	human	990-SG-100	NS0	100 µg
	mouse	992-SG-100	NS0	100 µg
TGF-β RI (ALK-5)/Fc Chimera	mouse	587-RI-050	Sf 21	50 µg
TGF-β RIIB/Fc Chimera	human	1003-RT-050	NS0	50 µg
Thrombopoietin R/Fc Chimera	human	1016-TR-050	NS0	50 µg
Tie-2/Fc Chimera	zebrafish	928-T2-100	NS0	100 µg
TNF-α/TNFSF2	cotton rat	1011-CR-025	E. coli	25 µg
TROP-2/Fc Chimera	human	650-T2-100	NS0	100 µg
UNC5H2/Fc Chimera	rat	1006-UN-050	NS0	50 µg
UNC5H3/Fc Chimera	human	1005-UN-050	NS0	50 µg
VE-Cadherin/Fc Chimera	human	938-VC-050	NS0	50 µg
VEGF-D	mouse	469-VD-025	Sf 21	25 µg

## Proteases & Substrates

Protein	Species	Catalog #	Source	Size
<b>Proteases</b>				
ACE	human	929-ZN-010	NS0	10 µg
ACE-2	human	933-ZN-010	NS0	10 µg
ADAM9	human	939-AD-020	NS0	20 µg
	mouse	949-AD-020	Sf 21	20 µg
ADAM10	human	936-AD-020	Sf 21	20 µg
Cathepsin B	human	953-CY-010	NS0	10 µg
	mouse	965-CY-010	NS0	10 µg
Cathepsin D	human	1014-AS-010	NS0	10 µg
Cathepsin H	mouse	1013-CY-010	NS0	10 µg
Cathepsin X/Z/P	human	934-CY-010	NS0	10 µg
CD26/DPPIV	mouse	954-SE-010	NS0	10 µg
<b>Protease Substrate</b>				
Pro-TNF-α/TNFSF2		1012-PS-010	E. coli	10 µg
<b>Peptide Substrate</b>				
Mca-RPPGFSAFK(Dnp)-OH		ES005		1 mg

## Additional Reagents

Product	Catalog #	Size
Streptavidin-Alkaline Phosphatase	AR001	1 mL
Resazurin for quantifying cell proliferation, viability and cytotoxicity	AR002	100 mL

## Angiotensin I- Converting Enzyme (ACE)

ACE (also known as peptidyl-dipeptidase A) is a zinc metallopeptidase important for blood pressure control and water and salt metabolism.<sup>2</sup> It cleaves the C-terminal dipeptide from angiotensin I to produce the potent vasopressor octapeptide angiotensin II and inactivates bradykinin by the sequential removal of two C-terminal dipeptides. In addition to the two physiological substrates, ACE cleaves C-terminal dipeptides from various oligopeptides with a free C-terminus. Due to its location and specificity, ACE plays additional roles in immunity, reproduction and neuropeptide regulation. For example, ACE degrades amyloid β-peptide (Aβ), retards Aβ aggregation, deposition, fibril formation, and inhibits cytotoxicity.<sup>3</sup>

ACE is a type I membrane protein and exists in two isoforms.<sup>2</sup> Somatic ACE, found in endothelial, epithelial and neuronal cells, comprises two highly similar domains (N- and C-domains) each of which contains the HEXXH consensus sequence for zinc binding. Germinal ACE, found exclusively in the testes, comprises a single, catalytically active domain identical to the C-domain of somatic ACE except for an N-terminal 67 residue germinal ACE-specific sequence. Physiological functions of the two tissue-specific isozymes are not interchangeable.<sup>4</sup>

Soluble ACE is present in many biological fluids, such as serum, seminal fluid, amniotic fluid and cerebrospinal fluid.<sup>2</sup> Soluble ACE is derived from the membrane forms by actions of secretases or sheddases, which have not been identified as of yet.

### References

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## Angiopoietin-like Proteins

The angiopoietins (Ang-1, Ang-2, and Ang-3/4) are natural agonists and antagonists of the Tie-2 receptor tyrosine kinase and are important modulators of angiogenesis.<sup>1</sup> Two domains characterize the angiopoietin family proteins: an N-terminal coiled-coiled domain that mediates homo-oligomerization, and a C-terminal fibrinogen-like domain that binds Tie-2.<sup>1</sup> Six angiopoietin-like (ANGPTL) molecules that share the characteristic protein structures of the angiopoietins, but differ by their inability to bind Tie-2, have been identified. They include: ANGPTL1 (also known as AngY1, Ang-3, ARP1);<sup>2</sup> ANGPTL2 (ARP2);<sup>3</sup> ANGPTL3 (Ang-5);<sup>4</sup> ANGPTL4 (FIAF, HFARP, PGAR);<sup>5,6</sup> ARP5;<sup>7</sup> and cornea-derived transcript 6 (CDT6).<sup>8</sup> Some of these proteins may also regulate angiogenesis. Two, ANGPTL3 and ANGPTL4, are involved in the regulation of lipid metabolism. The receptors for the angiopoietin-like proteins have not been identified.

ANGPTL3 is expressed principally in the liver. The ANGPTL3 gene has been mapped to human chromosome 1q11 and to the hypolipidemia locus of mouse chromosome 4. Intravenous injection of ANGPTL3 in the hypolipidemic mouse elicits an increase in circulating plasma lipid levels, suggesting that ANGPTL3 regulates lipid metabolism.<sup>9</sup>

ANGPTL4 is predominantly expressed in adipose tissue, placenta and liver. ANGPTL4 expression is modulated by leptin and is highly up-regulated during fasting. Circulating ANGPTL4 levels are increased by fasting and decreased by a chronic high fat diet, suggesting a role for ANGPTL4 as an endocrine signal in the regulation of systemic lipid metabolism.<sup>5,6</sup>

### References

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2. Kim, I. *et al.* (1999) *FEBS Lett.* **443**:353.
3. Kim, I. *et al.* (1999) *J. Biol. Chem.* **274**:26523.
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## Monoclonal Antibodies

Antibody	Species	Catalog #	Clone	Size
<b>ABCG2</b>	human	MAB995	5D3	500 µg
<b>Activin/Inhibin β<sub>B</sub> Chain</b>	human	MAB6772	99503	500 µg
<b>Activin RIB/ALK-4</b>	human	MAB222	126822	500 µg
<b>ALCAM</b>	human	MAB656	105901	500 µg
<b>ALK-1</b>	human	MAB370	117720	500 µg
<b>ALK-7</b>	rat	MAB577	118310	500 µg
<b>α<sub>2u</sub>-Globulin</b>	rat	MAB586	129736	500 µg
<b>Angiopoietin-3</b>	mouse	MAB738	113504	500 µg
<b>ANGPTL3</b>	mouse	MAB136	128610	500 µg
<b>B7-1 (CD80)</b>	mouse	MAB740	111114	500 µg
<b>BMP-4</b>	human	MAB7571	66110	500 µg
<b>BMPR-II</b>	human	MAB811	73805	500 µg
<b>BRAK/CXCL14</b>	human	MAB866	131120	500 µg
<b>CART aa 28-116</b>	human	MAB163	113612	500 µg
<b>CCI</b>	viral	MAB696	112811	500 µg
		MAB6961	112803	500 µg
<b>CCR7</b>	human	MAB197	150503	500 µg
<b>CD30 Ligand/TNFSF8</b>	human	MAB774	116615	500 µg
<b>CD30/TNFSF8</b>	mouse	MAB8521	115705	500 µg
<b>CD4</b>	mouse	MAB554	GK1.5	500 µg
<b>CD8</b>	mouse	MAB116	53-6.7	500 µg
<b>CNTF Rα</b>	human	MAB303	121723	500 µg
<b>CTACK/CCL27</b>	human	MAB3762	124315	500 µg
<b>CTGF C-terminal peptide</b>	human	MAB660	88430	500 µg
<b>CXCL16</b>	mouse	MAB503	142417	500 µg
<b>Dtk</b>	human	MAB859	96201	500 µg
	mouse	MAB759	109646	500 µg
<b>EDAR</b>	mouse	MAB745	132102	500 µg
<b>EMMPRIN</b>	human	MAB972	109403	500 µg
	mouse	MAB772	116318	500 µg
<b>Endostatin</b>	mouse	MAB570	91318	500 µg
<b>Eotaxin-2/CCL24</b>	mouse	MAB528	106521	500 µg
<b>EphA4</b>	mouse	MAB641	107925	500 µg
<b>EphA5</b>	rat	MAB541	86731	500 µg
<b>EphB1</b>	rat	MAB542	88506	500 µg
<b>Ephrin-A4</b>	human	MAB369	135305	500 µg
<b>Ephrin-B1</b>	mouse	MAB473	94034	500 µg
		MAB4731	94038	500 µg
<b>Ephrin-B3</b>	human	MAB395	88838	500 µg
<b>Fas Ligand/TNFSF6</b>	human	MAB126	100419	500 µg
<b>FGF-17</b>	human	MAB319	121630	500 µg
<b>Flt-3 (Flk-2)</b>	mouse	MAB768	113315	500 µg
<b>Fractalkine/CX3CL1</b>	human	MAB3652	81506	500 µg
	mouse	MAB571	126315	500 µg
	rat	MAB537	96834	500 µg
<b>GDF-8</b>	mouse	MAB788	84214	500 µg
<b>IFN-γ</b>	human	MAB2852	K3.53	500 µg
<b>IGFBP-3</b>	mouse	MAB775	138202	500 µg
<b>IGFBP-5</b>	mouse	MAB578	127535	500 µg
<b>IGFBP-6</b>	human	MAB8761	110211	500 µg

# Monoclonal Antibodies

Antibody	Species	Catalog #	Clone	Size
IGF-I	mouse	MAB791	126002	500 µg
IL-1 RI	mouse	MAB771	129301	500 µg
IL-3 Rβ	mouse	MAB549	130714	500 µg
IL-4 R	mouse	MAB530	129801	500 µg
IL-5	rat	MAB545	119905	500 µg
IL-13 Rα2	human	MAB614	83834	500 µg
IL-18 Rβ (IL-1 R7)	human	MAB118	132029	500 µg
	human	MAB1181	132016	500 µg
I-TAC/CXCL11	mouse	MAB572	131327	500 µg
KC	mouse	MAB4531	124014	500 µg
LAMP	human	MAB873	110728	500 µg
LIF Rα	human	MAB249	32953	500 µg
LIX	rat	MAB543	135803	500 µg
Lungkine/CXCL15	mouse	MAB442	96708	500 µg
MIP-1β/CCL4	mouse	MAB451	46907	500 µg
Netrin-1	chicken	MAB128	126518	500 µg
Neuropilin-1	rat	MAB566	130603	500 µg
Neurturin	human	MAB387	126422	500 µg
		MAB3871	126424	500 µg
NKG2C	human	MAB138	134591	500 µg
NKG2D	human	MAB139	149810	500 µg
p38α/MAPK14	human/mouse/rat	MAB869	142102	100 µg
Prolactin	human	MAB6821	127813	500 µg
Rad1	human	4451-MC-200	33	200 µg
c-Ret	human	MAB718	132507	500 µg
Spo11	human/mouse	4440-MC-100	180	100 µg
TGF-β1	human	MAB2401	141322	500 µg
TNF RII/TNFRSF1B	mouse	MAB426	TR7554	500 µg
		MAB4261	TR7532	500 µg
TNF-α/TNFSF2	porcine	MAB6902	103304	500 µg
TRAIL R3/TNFRSF10C	human	MAB630	90903	500 µg
TSLP R	mouse	MAB546	114704	500 µg
uPAR	mouse	MAB531	109801	500 µg
VEGF R2 (Flk-1)	mouse	MAB443	91201	500 µg
VEGF R3 (Flt-4)	mouse	MAB743	102806	500 µg
VEGF-B <sub>186</sub>	mouse	MAB767	124112	500 µg
WIF-1	human	MAB134	133015	500 µg
XPF	human	4430-MC-100	6D12	100 µg
		4431-MC-100	218	100 µg
		4432-MC-100	219	100 µg
XRCC1	human	4421-MC-100	144	100 µg

## TROP-2

Human TROP-2 [also called tumor associated calcium signal transducer 2 (TACSTD2), GA733-1, gp50 and T16] is a type I cell surface glycoprotein that is highly expressed on human carcinomas.<sup>1</sup> It consists of a putative 26 amino acid (aa) signal sequence, a 248 aa extracellular domain, a 23 aa transmembrane region and a 26 aa cytoplasmic domain.<sup>2</sup> Originally identified as an antigen present on human gastrointestinal tumors, TROP-2 is the second of two members of this family.<sup>2</sup> The other family member is EpCAM, also called GA733-2,<sup>2</sup> TROP-1, 17-1A, gp40 and KSA. TROP-2 and EpCAM share approximately 49% aa identity and approximately 67% similarity.<sup>1,3</sup> The TROP-2 gene is unique in that it contains no introns.<sup>2</sup> A study of these two genes suggests that TROP-2 is the result of a retroposition of the EpCAM gene.<sup>1</sup> Human and mouse TROP-2 share approximately 79% aa identity and approximately 87% similarity.<sup>4</sup> TROP-2 is capable of transducing an intracellular calcium signal,<sup>5</sup> is proposed to possess adhesive functions and may also play a role in tumor growth.<sup>3,5</sup>

### TROP Family Products from R&D Systems:

#### Recombinant Proteins

- Human **TROP-2**/Fc Chimera (650-T2-100)

#### Antigen-purified Polyclonal Antibodies

- Anti-human **TROP-2** (AF650)
- Anti-human **EpCAM** (AF960)

#### Biotinylated Antibodies

- Anti-human **TROP-2** (BAF650)

#### Monoclonal Antibodies

- Human **TROP-2** (MAB650)

### References

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## IL-1 Receptor Family

The interleukin 1 receptor (IL-1 R) superfamily comprises IL-1 R1 (also known as IL-1 RI), IL-1 R2 (IL-1 RII), IL-1 R3 (IL-1 RAcP), IL-1 R4 (T1/ST2, IL-1 RL1), IL-1 R5 (IL-18 R $\alpha$ , IL-1 Rrp), IL-1 R6 (IL-1 Rrp2, IL-1 RL2), IL-1 R7 (AcPL, IL-18 R $\beta$ ), IL-1 R8 (TIGIRR-2, X-linked IL-1RAPL1) and IL-1 R9 (TIGIRR-1, X-linked IL-1RAPL2), and SIGIRR.<sup>1</sup> With the exception of SIGIRR which has one immunoglobulin (Ig)-like domain, all family members possess three Ig-like domains in their extracellular region. All family members, except for IL-1 R2, also have an intracellular TIR (Toll-like receptor/IL-1 receptor signaling) domain. The genes for six IL-1 R family members (R1, R2, R4-R7) are clustered and localized to human chromosome 2.<sup>1,2</sup> IL-1 R3 and SIGIRR have been mapped to chromosome 3 and chromosome 11, respectively. IL-1 R8 and IL-1 R9 are located on the X chromosome.<sup>1</sup>

IL-1 R1 and IL-1 R3 form the high-affinity receptor complex required for IL-1 signaling. IL-1 R2 lacks the TIR domain required for signaling and functions as a decoy receptor that regulates IL-1 activity. IL-1 R5 and IL-1 R7 form the high affinity complex that mediates IL-18 activity. IL-1 R5 also binds IL-1F7. IL-1 R4 does not bind any known IL-1 family ligands but is a Th2 cell specific marker that mediates Th2 effector functions.<sup>3</sup> IL-1 R6 binds IL-1F9 and mediates the activation of NF- $\kappa$ B. IL-1 R6 also binds IL-1F5, an antagonist of NF- $\kappa$ B activation.<sup>4,5</sup> Expression of IL-1 R6 and its ligands are increased in lesional psoriasis skin, suggesting that IL-1 R6 may be involved in local inflammatory responses.<sup>4,5</sup> IL-1 R8 is highly expressed in the brain structures involved in the hippocampal memory system, suggesting a role for the protein in processes involved in cognitive functions.<sup>6</sup> Nonsense and deletion mutations of IL-1 R8 is responsible for a nonspecific form of X-linked mental retardation. Functions for IL-1 R9 and SIGIRR are not known.<sup>1</sup>

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## Polyclonal Antibodies

Antibody	Species	Host	Catalog #	Size
<b>4-1BB/TNFRSF9</b>	mouse	goat IgG	AF937	100 $\mu$ g
<b>ADAM9</b> ectodomain	mouse	goat IgG	AF949	100 $\mu$ g
<b>ADAM10</b> ectodomain	mouse	goat IgG total	AB946	1 mg
<b>ADAM15</b> ectodomain	human	goat IgG	AF935	100 $\mu$ g
	mouse	goat IgG	AF945	100 $\mu$ g
<b>BCMA/TNFRSF17</b>	mouse	goat IgG	AF593	100 $\mu$ g
<b>BRAK/CXCL14</b>	human	goat IgG	AF866	100 $\mu$ g
<b>CART</b>	human	goat IgG	AF163	100 $\mu$ g
<b>CD23</b>	human	goat IgG	AF123	100 $\mu$ g
<b>CD27/TNFRSF7</b>	mouse	goat IgG	AF574	100 $\mu$ g
<b>CD4</b>	mouse	goat IgG	AF554	100 $\mu$ g
<b>Common <math>\beta</math> Chain</b>	human	goat IgG	AF906	100 $\mu$ g
<b>CXCL16</b>	mouse	goat IgG	AF503	100 $\mu$ g
<b>Dhh</b> C-terminal peptide	mouse	goat IgG	AF196	100 $\mu$ g
<b>Desmoglein-2</b>	human	goat IgG	AF947	100 $\mu$ g
<b>Dkk-3</b>	mouse	goat IgG	AF948	100 $\mu$ g
<b>EDAR</b>	human	goat IgG	AF157	100 $\mu$ g
	mouse	goat IgG	AF745	100 $\mu$ g
<b>EpCAM</b>	human	goat IgG	AF960	100 $\mu$ g
<b>Ephrin-A5</b>	human	goat IgG	AF3743	100 $\mu$ g
<b>Erythropoietin</b>	mouse	goat IgG	AF959	100 $\mu$ g
<b>Frizzled-4</b>	mouse	goat IgG	AF194	100 $\mu$ g
<b>Frizzled-7</b>	mouse	goat IgG	AF198	100 $\mu$ g
<b>GDF-15/MIC-1</b>	human	goat IgG	AF957	100 $\mu$ g
<b>IFN-<math>\gamma</math></b>	canine	goat IgG	AF781	100 $\mu$ g
<b>IGFBP-2</b>	mouse	goat IgG	AF797	100 $\mu$ g
<b>IL-1<math>\alpha</math></b>	cotton rat	goat IgG	AF552	100 $\mu$ g
<b>IL-1 RI</b>	mouse	goat IgG	AF771	100 $\mu$ g
<b>IL-1 R8</b>	human	goat IgG	AF975	100 $\mu$ g
<b>IL-2 R<math>\beta</math></b>	mouse	goat IgG	AF589	100 $\mu$ g
<b>IL-3 R<math>\alpha</math></b>	mouse	goat IgG	AF983	100 $\mu$ g
<b>IL-4</b>	canine	goat IgG	AF754	100 $\mu$ g
	cotton rat	goat IgG	AF584	100 $\mu$ g
<b>IL-4 R</b>	mouse	goat IgG	AF530	100 $\mu$ g
<b>IL-6</b>	cotton rat	goat IgG	AF561	100 $\mu$ g
<b>IL-10</b>	canine	goat IgG	AF735	100 $\mu$ g
	feline	goat IgG	AF736	100 $\mu$ g
	viral (EBV)	goat IgG	AF915	100 $\mu$ g
<b>IL-15 R<math>\alpha</math></b>	mouse	goat IgG	AF551	100 $\mu$ g
<b>IL-17 R</b>	human	goat IgG	AF177	100 $\mu$ g
<b>IL-18 BpC</b>	mouse	goat IgG	AF129	100 $\mu$ g
<b>IL-18 BpD</b>	mouse	goat IgG	AF122	100 $\mu$ g
<b>IL-21</b>	human	goat IgG	AF794	100 $\mu$ g
	mouse	goat IgG	AF594	100 $\mu$ g
<b>IL-21 R</b>	human	goat IgG	AF991	100 $\mu$ g
<b>LBP</b>	human	goat IgG	AF870	100 $\mu$ g
<b>MD-1</b>	mouse	goat IgG	AF130	100 $\mu$ g
<b>Netrin-2</b>	chicken	goat IgG	AF127	100 $\mu$ g
<b>Noggin</b>	mouse	goat IgG	AF719	100 $\mu$ g

## Polyclonal Antibodies

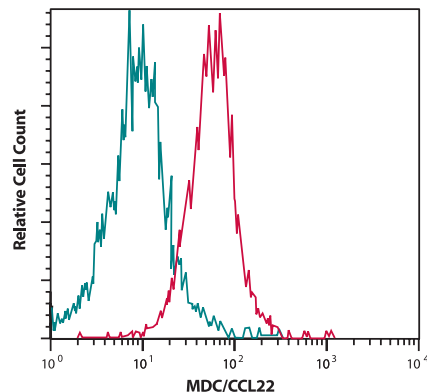
Antibody	Species	Host	Catalog #	Size
<b>Phospho-ERK1/2</b>	human/mouse/rat	rabbit IgG	AF1018	100 µg
<b>Phospho-p70S6K</b>	human	rabbit IgG	AF8961	100 µg
<b>PF4/CXCL4</b>	mouse	goat IgG	AF595	100 µg
<b>Presenilin-1</b> <i>C-term. fragment</i>	human	goat IgG	AF166	100 µg
<b>Presenilin-2</b> <i>C-term. fragment</i>	human	goat IgG	AF197	100 µg
<b>Presenilin-2</b> <i>N-term. fragment</i>	human	goat IgG	AF153	100 µg
<b>P-Selectin</b>	human	sheep IgG	AF137	100 µg
<b>RSK1</b>	human/mouse	rabbit IgG	AF992	100 µg
<b>SMAC/Diablo</b>	human	rabbit IgG	AF789	100 µg
<b>TGF-β RI (ALK-5)</b>	mouse	goat IgG	AF587	100 µg
<b>TIMP-1</b>	rat	goat IgG	AF580	100 µg
<b>TRANCE/TNFSF11</b>	human	goat IgG	AF626	100 µg
		goat IgG <i>total</i>	AB626	1 mg
<b>TSLP R</b>	human	goat IgG	AF981	100 µg
<b>VE-Cadherin</b>	human	goat IgG	AF938	100 µg
<b>VEGF-B<sub>167/186</sub></b>	mouse	goat IgG	AF590	100 µg
<b>VE-JAM</b>	mouse	goat IgG	AF988	100 µg
<b>WIF-1</b>	human	goat IgG	AF134	100 µg
	mouse	goat IgG	AF135	100 µg

## Fluorochrome-labeled Monoclonal Antibodies

Antibody	Species	Catalog #	Label	Clone	Size
<b>CCR6</b>	mouse	FAB590F	fluorescein	140706	100 Tests
<b>CCR7</b>	human	FAB197F	fluorescein	150503	100 Tests
		FAB197P	phycoerythrin	150503	100 Tests
<b>CD28</b>	human	FAB342P	phycoerythrin	37407	100 Tests
<b>CD30/TNFRSF8</b>	human	FAB229F	fluorescein	81337	100 Tests
		FAB229P	phycoerythrin	81337	100 Tests
<b>CTLA-4</b>	human	FAB325F	fluorescein	48815	100 Tests
	mouse	FAB434F	fluorescein	63828	100 Tests
<b>Erythropoietin R</b>	human	FAB307F	fluorescein	38409	100 Tests
<b>Fas Ligand/TNFSF6</b>	human	FAB1261P	phycoerythrin	100413	100 Tests
<b>TSLP R</b>	mouse	FAB546F	fluorescein	114704	100 Tests
		FAB546P	phycoerythrin	114704	100 Tests
<b>Eotaxin/CCL11</b>	human	IC3201P	phycoerythrin	43915	100 Tests
<b>GM-CSF</b>	human	IC615P	phycoerythrin	6804	100 Tests
<b>MDC/CCL22</b>	human	IC3361P	phycoerythrin	57203	100 Tests
<b>TARC/CCL17</b>	human	IC3641P	phycoerythrin	54015	100 Tests

## Intracellular Staining

The advent of monoclonal antibody technology provided biologists with a valuable tool for identifying cells by virtue of what they express on their cell surface. In some research activities, however, cells do not provide enough external clues to their identity. The alternative approach of staining cells intracellularly, as an indicator of what the cell is capable of synthesizing, has proven quite valuable. For example, the ability to distinguish the polarized differentiation of T cells (Th1 vs. Th2) or dendritic cells (DC1 vs. DC2) is primarily accomplished with the aid of antibodies that can detect the intracellular presence and/or absence of selected cytokines.



**Intracellular Staining for MDC/CCL22.** Dendritic cells (DC) were generated by culturing peripheral blood monocytes for 10 days in the presence of 20 ng/mL IL-13 and 50 ng/mL GM-CSF. During the last 24 hours (prior to harvesting of the cells), LPS, TNF- $\alpha$ , IL-1 $\beta$  (20 ng/mL each) and 3  $\mu$ M monensin were added to the culture. The histogram is a comparison of cell surface (green) vs. intracellular MDC/CCL22 staining of DC using our phycoerythrin-labeled anti-human MDC/CCL22 monoclonal antibody (red, catalog # IC3361P). IC3361P demonstrates negligible reactivity with MDC/CCL22 that may be present on cell surfaces as a result of engagement with receptors or other ligands. This property of IC3361P ensures that intracellular staining results reflect the true amount of intracellular MDC/CCL22 present within cells rather than a mixed signal due to intracellular MDC/CCL22 and extracellular-associated MDC/CCL22.

In our continued effort to provide reagents suitable for intracellular staining applications, we now offer the following directly fluorochrome-conjugated monoclonal antibodies:

- Anti-human **G-CSF** (IC2141P)
- Anti-human **GM-CSF** (IC615P)
- Anti-human **MDC/CCL22** (IC3361P)
- Anti-human **TARC/CCL17** (IC3641P)
- Anti-human **Eotaxin/CCL11** (IC3201P)

## EDA/EDAR

The EDA (ectodysplasin-A, in human)/Ta (Tabby, in mouse) gene encodes a predicted type II transmembrane protein containing a C-terminal region that is homologous to members of the TNFSF.<sup>1-4</sup> The most common and longest splice isoforms of EDA, EDA-A1 and EDA-A2, differ by only two amino acids and activate NF- $\kappa$ B-promoted transcription by binding to distinct receptors, EDAR and XEDAR, respectively.<sup>2,5-7</sup> EDAR (also called DL in the human and dl in the mouse) is a putative type I transmembrane protein that is similar to members of the TNFRSF.<sup>6,8</sup> EDAR expression appears to be restricted to fetal and embryonic tissues during periods of hair follicle, eccrine sweat gland, and tooth bud formation. Mutations in EDAR are responsible for the autosomal recessive disorder hypohidrotic ectodermal dysplasia (HED) in humans and downless (dl) in mice. Humans with HED and dl mice share a similar phenotype characterized by defects in hair follicle induction, the lack of sweat glands, and malformed teeth. Phenotypically indistinguishable X-linked forms of HED and dl map to the EDA gene locus in the human and Ta in the mouse.<sup>1,4</sup>

### EDA/EDAR Products from R&D Systems:

#### Recombinant Proteins

- Human **EDAR**/Fc Chimera (157-ER-100)
- Mouse **EDAR**/Fc Chimera (745-ED-050)
- Human **EDA-A2** (922-ED-010)

#### Antigen-purified Polyclonal Antibodies

- Human **EDAR** (AF157)
- Mouse **EDAR** (AF745)

#### Biotinylated Antibodies

- Human **EDAR** (BAF157)
- Mouse **EDAR** (BAF745)

#### Monoclonal Antibodies

- Mouse **EDAR** (MAB745)

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## Biotinylated Antibodies

Antibody	Species	Host	Catalog #	Size
<b>ADAM9</b> ectodomain	human	goat IgG	BAF939	.50 $\mu$ g
<b>ADAM15</b> ectodomain	human	goat IgG	BAF935	.50 $\mu$ g
	mouse	goat IgG	BAF945	.50 $\mu$ g
<b>B7-H2</b>	human	goat IgG	BAF165	.50 $\mu$ g
<b>BMP-4</b>	human	mouse IgG <sub>1</sub>	BAM7572	.250 $\mu$ g
<b>CD23</b>	human	goat IgG	BAF123	.50 $\mu$ g
<b>CD4</b>	mouse	goat IgG	BAF554	.50 $\mu$ g
<b>Common <math>\beta</math> Chain</b>	human	goat IgG	BAF906	.50 $\mu$ g
<b>CXCL16</b>	mouse	goat IgG	BAF503	.50 $\mu$ g
<b>Desmoglein-2</b>	human	goat IgG	BAF947	.50 $\mu$ g
<b>Dkk-3</b>	mouse	goat IgG	BAF948	.50 $\mu$ g
<b>EDAR</b>	human	goat IgG	BAF157	.50 $\mu$ g
<b>EphB1</b>	rat	goat IgG	BAF542	.50 $\mu$ g
<b>Erythropoietin</b>	mouse	goat IgG	BAF959	.50 $\mu$ g
<b>Frizzled-4</b>	mouse	goat IgG	BAF194	.50 $\mu$ g
<b>GDF-15/MIC-1</b>	human	goat IgG	BAF940	.50 $\mu$ g
<b>ICAM-1 (CD54)</b>	rat	goat IgG	BAF583	.50 $\mu$ g
<b>IFN-<math>\gamma</math></b>	cotton rat	goat IgG	BAF565	.50 $\mu$ g
	canine	goat IgG	BAF781	.50 $\mu$ g
<b>IGFBP-2</b>	mouse	goat IgG	BAF797	.50 $\mu$ g
<b>IgG</b>	mouse	goat IgG	BAF007	.250 $\mu$ g
	rabbit	goat IgG	BAF008	.250 $\mu$ g
<b>IL-1<math>\alpha</math></b>	cotton rat	goat IgG	BAF552	.50 $\mu$ g
<b>IL-2 R<math>\gamma</math></b>	mouse	goat IgG	BAF784	.50 $\mu$ g
<b>IL-4</b>	cotton rat	goat IgG	BAF584	.50 $\mu$ g
	canine	goat IgG	BAF754	.50 $\mu$ g
<b>IL-4 R</b>	mouse	goat IgG	BAF530	.50 $\mu$ g
<b>IL-5 R<math>\alpha</math></b>	mouse	goat IgG	BAF553	.50 $\mu$ g
<b>IL-10</b>	canine	goat IgG	BAF735	.50 $\mu$ g
<b>IL-15 R<math>\alpha</math></b>	mouse	goat IgG	BAF551	.50 $\mu$ g
<b>IL-17 R</b>	human	goat IgG	BAF177	.50 $\mu$ g
<b>IL-18</b>	porcine	goat IgG	BAF588	.50 $\mu$ g
<b>IL-18 R<math>\beta</math> (IL-1 R7)</b>	human	goat IgG	BAF118	.50 $\mu$ g
<b>IL-21</b>	human	goat IgG	BAF794	.50 $\mu$ g
<b>IL-21 R</b>	human	goat IgG	BAF991	.50 $\mu$ g
<b>MCP-2/CCL8</b>	mouse	goat IgG	BAF790	.50 $\mu$ g
<b>MD-1</b>	mouse	goat IgG	BAF130	.50 $\mu$ g
<b>Mer</b>	human	goat IgG	BAF891	.50 $\mu$ g
<b>MMP-10</b>	human	goat IgG	BAF910	.50 $\mu$ g
<b>Netrin-2</b>	chicken	goat IgG	BAF127	.50 $\mu$ g
<b>Noggin</b>	mouse	goat IgG	BAF719	.50 $\mu$ g
<b>PF4/CXCL4</b>	mouse	goat IgG	BAF595	.50 $\mu$ g
<b>Presenilin-1 C-term. fragment</b>	human	goat IgG	BAF166	.50 $\mu$ g
<b>SPARC</b>	human	goat IgG	BAF941	.50 $\mu$ g
<b>Survivin</b>	human	goat IgG	BAF6471	.50 $\mu$ g
<b>TGF-<math>\beta</math> RI/ALK-5</b>	mouse	goat IgG	BAF587	.50 $\mu$ g
<b>TIMP-1</b>	rat	goat IgG	BAF580	.50 $\mu$ g
<b>TRANCE/TNFSF11</b>	human	goat IgG	BAF626	.50 $\mu$ g
<b>TSG</b>	mouse	goat IgG	BAF756	.50 $\mu$ g
<b>TSLP R</b>	human	goat IgG	BAF981	.50 $\mu$ g
<b>VE-JAM</b>	mouse	goat IgG	BAF988	.50 $\mu$ g

# ELISA Development Systems ABCG2

Analyte	Species	Catalog #	Range	Size
Dtk	.mouse	.DY759	.125-8000 pg/mL	.1 Kit
Fractalkine/CX3CL1	.human	.DY365	.625-20 ng/mL	.1 Kit
IGFBP-2	.human	.DY674	.62.5-4000 pg/mL	.1 Kit
IL-1 RI	.human	.DY269	.125-8000 pg/mL	.1 Kit
IL-1 $\alpha$	.mouse	.DY400	.15.6-1000 pg/mL	.1 Kit
IL-3	.mouse	.DY403	.7.8-500 pg/mL	.1 Kit
IL-15	.human	.DY247	.15.6-1000 pg/mL	.1 Kit
IL-16	.human	.DY316	.15.6-1000 pg/mL	.1 Kit
IL-17	.mouse	.DY421	.15.6-1000 pg/mL	.1 Kit
IP-10/CXCL10	.human	.DY266	.31.2-2000 pg/mL	.1 Kit
SCF	.mouse	.DY455	.62.5-4000 pg/mL	.1 Kit
TIMP-2	.human	.DY971	.31.2-2000 pg/mL	.1 Kit

## Matched Antibody Pairs

Analyte	Species	Catalog #	Use	Size
BMP-4	.human	.MAB7571	.capture	.500 $\mu$ g
		.BAM7572	.detection	.250 $\mu$ g
		.314-BP-010	.protein	.10 $\mu$ g
Dtk	.mouse	.MAB759	.capture	.500 $\mu$ g
		.BAF759	.detection	.50 $\mu$ g
		.759-DT-100	.protein	.100 $\mu$ g
Eotaxin-2/CCL24	.mouse	.MAB528	.capture	.500 $\mu$ g
		.BAF528	.detection	.50 $\mu$ g
		.528-MP-025	.protein	.25 $\mu$ g
Fas Ligand/TNFSF6	.mouse	.MAB5262	.capture	.500 $\mu$ g
		.BAF526	.detection	.50 $\mu$ g
		.526-SA-050	.protein	.50 $\mu$ g
Fractalkine/CX3CL1	.human	.MAB3652	.capture	.500 $\mu$ g
		.BAM365	.detection	.100 $\mu$ g
		.362-CX-025	.protein	.25 $\mu$ g
		.365-FR-025	.protein	.25 $\mu$ g
GITR/TNFRSF18	.human	.MAB689	.capture	.500 $\mu$ g
		.BAF689	.detection	.50 $\mu$ g
		.689-GR-100	.protein	.100 $\mu$ g
IGFBP-3	.mouse	.MAB775	.capture	.500 $\mu$ g
		.BAF775	.detection	.50 $\mu$ g
		.775-B3-025	.protein	.25 $\mu$ g
IGFBP-6	.human	.MAB8761	.capture	.500 $\mu$ g
		.BAF876	.detection	.50 $\mu$ g
		.876-B6-025	.protein	.25 $\mu$ g
IL-8/CXCL8	.porcine	.MAB5351	.capture	.500 $\mu$ g
		.BAF535	.detection	.50 $\mu$ g
		.535-IN-025	.protein	.25 $\mu$ g
MIP-1 $\gamma$ /CCL9/10	.mouse	.MAB463	.capture	.500 $\mu$ g
		.BAF463	.detection	.50 $\mu$ g
		.463-MG-025	.protein	.25 $\mu$ g
TECK/CCL25	.human	.MAB3341	.capture	.500 $\mu$ g
		.BAF334	.detection	.50 $\mu$ g
		.334-TK-025	.protein	.25 $\mu$ g
	.mouse	.MAB4811	.capture	.500 $\mu$ g
VEGF-D	.human	.BAF481	.detection	.50 $\mu$ g
		.481-TK-025	.protein	.25 $\mu$ g
		.MAB2861	.capture	.500 $\mu$ g
		.BAM286	.detection	.250 $\mu$ g
		.622-VD-005	.protein	.5 $\mu$ g

The human ATP-binding cassette transporter G2 (ABCG2, also called MXR, BCRP, or ABCP) is a newly identified half-transporter member of the ABC gene family, which localizes predominantly to the plasma membrane and causes multidrug resistance in cancer.<sup>1</sup> Overexpression of ABCG2 in human MCF-7 breast cancer cells results in a broad spectrum of drug resistance<sup>2</sup> and high levels of ABCG2 have been reported to be associated with acute myeloid leukemia.<sup>3</sup>

ABCG2 has also been identified as a potent Hoechst efflux pump and its expression is highly conserved in primitive stem cells from a variety of sources, including bone marrow, skeletal muscle and enriched neural progenitor populations.<sup>4-6</sup> ABCG2 contributes significantly to the generation of the Hoechst-negative phenotype of side population (SP), which has been shown to be a population with multi-organ plasticity.<sup>7</sup> ABCG2 expression may therefore prove to be a marker for positive selection of pluripotent stem cells from adult.

### New ABCG2 Products from R&D Systems:

#### Monoclonal Antibodies

- Human **ABCG2** (MAB995)

#### References

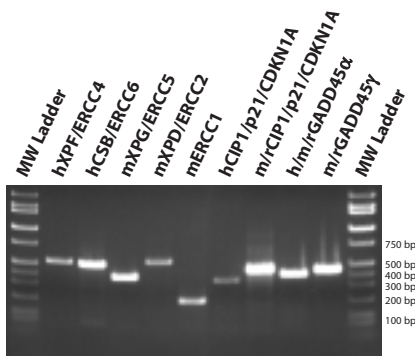
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## DNA Damage & Repair: Primer Pairs

R&D Systems now offers a variety of primer pairs for genes involved in DNA damage and repair, as well as, cell cycle checkpoint activation. Many of the genes involved in these processes show differential expression in certain biological pathways or conditions (Table 1). These primer pairs can be used in studies where qualitative RT-PCR analysis is appropriate (Figure 1).

Research Focus	Differentially Expressed Genes
DNA repair capacity	ERCC1, XPD
Sensitivity to genotoxic agents	MGMT, BRCA1, BRCA2
Cancer and various tumor types	CSB, ERCC1, XPF, XPG, BRCA1, BRCA2, MGMT, OGG1, XPB
Cell cycle checkpoint activation	p21/CIP1/CDKN1A, GADD45 $\alpha$ , GADD45 $\gamma$

**Table 1.** Genes showing differential expression in certain biological pathways or conditions.



**Figure 1.** Qualitative RT-PCR analyses. RT-PCR reactions were performed as described in the primer pair product insert. PCR products were amplified using the indicated primer pair and the first-strand cDNA source known to express the target gene. PCR products (10  $\mu$ L/well) were electrophoresed on a 1.5% agarose gel and visualized with ethidium bromide staining. (h=human, m=mouse, h/m/r=human/mouse/rat, m/r=mouse/rat)

## Primer Pairs

Product	Species	Catalog #	Size
CIP1/p21/CDKN1A	human	.RDP-164-025	.25 Tests
	mouse/rat	.RDP-165-025	.25 Tests
CSB/ERCC6	human	.RDP-161-025	.25 Tests
ERCC1	mouse	.RDP-160-025	.25 Tests
GADD45 $\alpha$	human/mouse/rat	.RDP-162-025	.25 Tests
GADD45 $\gamma$	mouse/rat	.RDP-163-025	.25 Tests
GFAP	human	.RDP-166-025	.25 Tests
	mouse/rat	.RDP-149-025	.25 Tests
MAP2	human	.RDP-154-025	.25 Tests
	mouse/rat	.RDP-150-025	.25 Tests
NCAM	human/mouse/rat	.RDP-147-025	.25 Tests
	human	.RDP-148-025	.25 Tests
Nestin	mouse/rat	.RDP-153-025	.25 Tests
	human/mouse/rat	.RDP-152-025	.25 Tests
PLP/DM-20	human/mouse/rat	.RDP-152-025	.25 Tests
VIM	human/mouse/rat	.RDP-151-025	.25 Tests
	human	.RDP-155-025	.25 Tests
XPD/ERCC2	mouse	.RDP-156-025	.25 Tests
	human	.RDP-157-025	.25 Tests
XPF/ERCC4	human	.RDP-157-025	.25 Tests
XPG/ERCC5	human	.RDP-158-025	.25 Tests
	mouse	.RDP-159-025	.25 Tests

## DNA Repair Enzymes

Product	Species	Catalog #	Size
Photolyase	<i>E. coli</i>	.4145-100-EB	.100 $\mu$ g
DNA Ligase IV/XRCC4 Tetramer	human	.4140-100-EB	.100 Units
	human	.4140-500-EB	.500 Units
Ku70/80 Complex	human	.4135-100-EB	.100 Units
	human	.4135-500-EB	.500 Units

All enzymes (whether sold alone or in a kit) are provided with a compatible buffer.

## Apoptosis Detection Kits

Product	Catalog #	Size
VasoTACS™ <i>In Situ</i>	.4826-30-K	.30 Tests

## mRNA Quantitation Kits

Product	Species	Catalog #	Sensitivity	Range	Size
<b>Bax-<math>\alpha</math></b>	human	.KRN820	.0.7 amol/mL	.0.5-1.6 amol/mL	.1 Kit
<b>Bcl-2</b>	human	.KRN827	.1.1 amol/mL	.0.5-2.7 amol/mL	.1 Kit
<b>L-Selectin</b>	human	.KRN728	.2.7 amol/mL	.1.4-5.1 amol/mL	.1 Kit
<b>Survivin</b>	human	.KRN647	.4.4 amol/mL	.1.4-7.9 amol/mL	.1 Kit
<b>TRAIL/TNFSF10</b>	human	.KRN375	.1.0 amol/mL	.0.6-1.4 amol/mL	.1 Kit
<b>VCAM-1</b>	human	.KRN809	.1.0 amol/mL	.0.7-1.4 amol/mL	.1 Kit

## ELISpot Kits & Reagents

Product	Species	Catalog #	Size
<b>ELISpot Kits</b>			
<b>IFN-<math>\gamma</math></b>	.rat	.EL585	.1 Kit
<b>IL-5</b>	.human	.EL205	.1 Kit
<b>IL-10</b>	.mouse	.EL417	.1 Kit
<b>ELISpot Development Modules</b>			
<b>IL-1<math>\beta</math></b>	.human	.SEL201	.1 Kit
<b>IL-2</b>	.human	.SEL202	.1 Kit
<b>IL-6</b>	.human	.SEL206	.1 Kit
	.mouse	.SEL406	.1 Kit

## Fluorokine<sup>®</sup> MAP Kits

Fluorokine<sup>®</sup> MAP (Multi-Analyte Profiling) kits are now available for cell culture supernatant, serum, and plasma sample types. The Fluorokine MAP system allows for the simultaneous measurement of up to 12 cytokines in the same 50  $\mu$ L sample. The following analyte-specific bead sets are available for multi-plexing on the Fluorokine MAP base kit.

Analyte	Species	Catalog #	Size
<i>One Base Kit, at least one Analyte Kit and the Luminex100<sup>™</sup> Analyzer are required to run the assay.</i>			
<b>Base Kit</b>	.NA	.LU000	.1 Kit
<b>FGF basic</b>	.human	.LU233	.1 Kit
<b>G-CSF</b>	.human	.LU214	.1 Kit
<b>GM-CSF</b>	.human	.LU215	.1 Kit
<b>IFN-<math>\gamma</math></b>	.human	.LU285	.1 Kit
<b>IL-1<math>\beta</math></b>	.human	.LU201	.1 Kit
<b>IL-2</b>	.human	.LU202	.1 Kit
<b>IL-4</b>	.human	.LU204	.1 Kit
<b>IL-6</b>	.human	.LU206	.1 Kit
<b>IL-8</b>	.human	.LU208	.1 Kit
<b>IL-10</b>	.human	.LU217	.1 Kit
<b>TNF-<math>\alpha</math></b>	.human	.LU210	.1 Kit
<b>VEGF</b>	.human	.LU293	.1 Kit

## Survivin

Survivin has spurred a great deal of interest in the fields of both apoptosis and cancer-related research. Survivin, also known as BIRC5 (baculoviral IAP repeat-containing 5), is a member of the inhibitor of apoptosis protein (IAP) family and displays interesting and unique features. One of the main characteristics that comes to the forefront, however, is the survivin mRNA expression pattern. Survivin mRNA is not expressed in terminally differentiated adult tissues, but is abundantly expressed in many fetal tissues, such as kidney, liver, lung, and brain, in addition to transformed cell lines and many cancers.<sup>1,2</sup> Survivin is expressed in a cell cycle dependent manner at the G2/M phase of the cell cycle<sup>2,3</sup> and has the ability to inhibit the normal apoptotic pathway(s) at this checkpoint.<sup>1,4</sup> As a result, survivin has been implicated as a participant in the pathway that allows transformed cells to progress through mitosis and continue cell division. Furthermore, given the fact that survivin is expressed in nearly all cancers and is not found in terminally differentiated adult tissues, this molecule may have prognostic value, as well as serve as an excellent target for chemotherapeutic agents.<sup>2,4</sup>

### Survivin Products from R&D Systems:

#### Antigen-purified Polyclonal Antibodies

- Anti-human **Survivin** (AF6471)
- Anti-human **Survivin** (AF886)

#### Biotinylated Antibodies

- Anti-human **Survivin** (BAF6471)

#### DuoSet IC Kits

- Human **Survivin** (DYC647)

#### mRNA Quantitation Kits

- Human **Survivin** (KRN647)

#### Recombinant Western Blot Standard

- Human **Survivin** (WBC010B)

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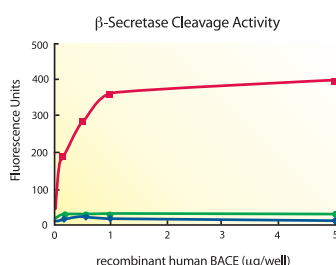
# Secretase Activity Assays

The hallmark of Alzheimer's disease is the deposition of a 4 kDa amyloid beta peptide ( $A\beta$ ) of either 40 or 42 amino acids in length<sup>1-3</sup> that is derived from the amyloid precursor protein (APP).  $A\beta$  peptide is formed as a result of the cleavage action of at least 2 enzymes known as  $\beta$ -secretase and  $\gamma$ -secretase. An additional  $\alpha$ -secretase activity has also been described. The cleavage domains of APP that are targeted by these enzymes are membrane proximal, thus suggesting that the secretases are likely also membrane bound proteins. The metalloproteases TACE/ADAM17 and ADAM10 exhibit  $\alpha$ -secretase activity,<sup>4</sup> while  $\beta$ -secretase activity has been attributed to the pepstatin-insensitive enzyme BACE.<sup>5,6</sup> Although the identity of  $\gamma$ -secretase remains elusive, a number of candidates have been proposed, including presenilin-1 and presenilin-2.<sup>7</sup>

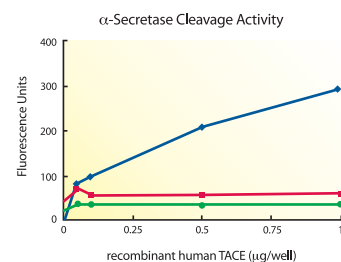
In figures 1-3, we provide evidence for the substrate specificities of the  $\alpha$ -,  $\beta$ -, and  $\gamma$ -secretases. The cleavage activity associated with each of these three secretases was monitored using caged fluorescent reporter (EDANS-DABCYL) substrates that encompass the three distinct secretase cleavage sites of the APP protein. Recombinant enzymes were the source of  $\alpha$ - and  $\beta$ -secretase activities, while mouse brain, a tissue rich in secretase activity, was the source of the  $\gamma$ -secretase activity. The lack of cross-reactivity in enzymatic action for each of the different substrate sequences selected made it possible to follow the three distinct secretase activities.

## References

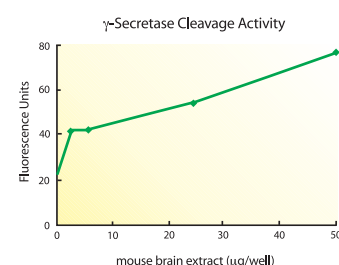
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**Figure 2.** Recombinant BACE exclusively cleaves the  $\beta$ -substrate sequence (red), demonstrating no activity on either the  $\alpha$ - or  $\gamma$ -substrate (blue and green, respectively).



**Figure 1.** Recombinant TACE exclusively cleaves the  $\alpha$ -secretase substrate (blue) and is unable to cleave the  $\beta$ - and  $\gamma$ -substrate (red and green, respectively).



**Figure 3.** Exposure to mouse brain extract (*i.e.* a tissue known to contain  $\gamma$ -secretase activity) results in cleavage activity for the  $\gamma$ -substrate sequence (green).

## Secretase Activity Assays

*These kits may be applicable for monitoring or comparing specific secretase activities between different tissue sources as well as in identifying possible inhibitors of these enzymes. They may also be useful in determining the role of secretases in Notch processing and signaling during embryonic development.*

Product	Catalog #	Size
$\alpha$ -Secretase	.FP001	.1 Kit
$\beta$ -Secretase	.FP002	.1 Kit
$\gamma$ -Secretase	.FP003	.1 Kit



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