



## Quantikine® Human ACE ELISA

Angiotensin I Converting Enzyme (ACE), also known as peptidyl-dipeptidase A or CD143, is a zinc metallopeptidase best known for its role in the renin-angiotensin system (RAS) as an important regulator of blood pressure and electrolyte balance.<sup>1,2</sup> It cleaves the C-terminal dipeptide from angiotensin I to produce the octapeptide angiotensin II, a potent vasopressor. It also inactivates bradykinin, a potent vasodilator, by the sequential removal of two C-terminal dipeptides. In addition to these two physiological substrates, ACE cleaves C-terminal dipeptides from various oligopeptides with a free C-terminus.<sup>3</sup>

Two ACE isoforms are transcribed from a single gene using alternative promoters.<sup>2</sup> Somatic ACE (sACE) is a 140 kDa protein found in endothelial, epithelial and neuronal cells. It is comprised of two highly similar active domains designated N- and C-domains, each of which contains the HExxH consensus sequence for zinc binding.<sup>4</sup> Germinal ACE (gACE) is 70 kDa and is found exclusively in the testes. It comprises a single, catalytically-active domain identical to the C-domain of sACE with the exception of a 67-amino acid, gACE-

specific sequence at its N-terminus. Physiological functions of the two tissue-specific isozymes are not interchangeable.<sup>4</sup>

Both forms are present on the cell surface where they can hydrolyze passing peptides.<sup>5</sup> Additionally, as a type I membrane protein subjected to shedding by secretases, ACE becomes soluble in many biological fluids including serum, plasma, seminal fluid, amniotic fluid and cerebrospinal fluid.<sup>1</sup> It has been shown, however, that the membrane-bound form and not the soluble form participates in blood pressure regulation and renal function.<sup>5</sup>

ACE is also involved in immunity, reproduction and neuropeptide regulation due to its localization and specificity.<sup>5</sup> In the brain, for example, ACE demonstrates an ability to degrade amyloid  $\beta$  peptide ( $A\beta$ ), retard  $A\beta$  aggregation, deposition, and fibril formation, and inhibit cytotoxicity in Alzheimer's Disease.<sup>3</sup> ACE inhibitors are now used clinically to treat hypertension, congestive heart failure and myocardial infarction, endothelial dysfunction and renal disease including diabetic nephropathy.<sup>2</sup>

The Quantikine Human ACE Immunoassay is a 4.5 hour solid phase ELISA designed to measure ACE in cell culture supernates, serum, plasma, and saliva. The kit does not show cross-reactivity with human ACE-2, a structurally related but functionally diverse protein.

### References

1. Corvol, P. & T.A. Williams (1998) in *Handbook of Proteolytic Enzymes*, Barrett, A.J. et al. eds., Academic Press, San Diego, pp. 1066-1076.
2. Turner, A.J. & N.M. Hooper (2002) *Trends Pharmacol. Sci.* **23**:177.
3. Hu, J. et al. (2001) *J. Biol. Chem.* **276**:47863.
4. Kessler, S.P. et al. (2000) *J. Biol. Chem.* **275**:26259.
5. Danilczyk, U. et al. (2003) *J. Mol. Med.* **81**:227.

### Contents

Recombinant & Natural Proteins	2-3
Polyclonal Antibodies	3-5
Monoclonal Antibodies	5-7
Labeled Antibodies	8-9
Antibody Controls	9
ELISA & Activity Assay Development Kits	10
Stem Cell Kits	10
Fluorokine® Receptor Detection Kit	10
Caspase Inhibitors	11
Cell Culture Reagents	11
Primer Pairs	11
Fluorokine® MAP Multiplex Reagents	11
Wnt-5a	12

## ELISA & Activity Assay Kits

Analyte	Species	Catalog #	Sensitivity	Range	Size
ACE	Human	DACE00	0.019 ng/mL	0.78-50 ng/mL	1 Kit
$\alpha$ -Fetoprotein	Human	DAFP00	0.013 ng/mL	0.312-20 ng/mL	1 Kit
IL-7	Mouse	M7000	6.3 pg/mL	31.2-2000 pg/mL	1 Kit
IL-11	Mouse	M1100	6.8 pg/mL	31.2-2000 pg/mL	1 Kit
Leptin sR (OB sR)	Human	DOBR00	0.097 ng/mL	0.312-20 ng/mL	1 Kit
Osteopontin (OPN)	Human	DOST00	0.011 ng/mL	0.312-20 ng/mL	1 Kit
PDGF-AB	Mouse/Rat	MHD00	2.3 pg/mL	7.8-500 pg/mL	1 Kit
Resistin	Mouse	MRSN00	5 pg/mL	31.2-2000 pg/mL	1 Kit

These products are for research use only. Not for use in diagnostic procedures.

## Azurocidin/CAP37/HBP

Azurocidin, also known as cationic anti-microbial protein 37 (CAP37) and heparin-binding protein (HBP), is a member of the serine protease family that includes Cathepsin G, neutrophil elastase (NE), and proteinase 3 (PR3). These proteases are found in the specialized azurophilic granules of neutrophils.<sup>1,2</sup> Human Azurocidin is encoded by the AZU1 gene located in a cluster with NE and PR3 on chromosome 19pter.<sup>2</sup> The open reading frame predicts a 251-amino acid (aa) protein with an N-terminal 26-aa signal sequence and a 7-aa propeptide. There are also eight cysteine residues and 3 putative N-linked glycosylation sites.<sup>1</sup>

Although Azurocidin shares a significant degree of aa sequence identity with Cathepsin G, NE, and PR3, it lacks serine protease activity due to mutations at two of the three residues in the catalytic triad (His41Ser and Ser175Gly).<sup>1,3</sup> Crystallographic analysis suggests that the antibacterial activity of Azurocidin is mediated by a hydrophobic pocket (residues 20 to 44) that binds Gram-negative bacteria lipid A. These structural data also imply that the heparin binding capacity is mediated by non-specific electrostatic interactions between the negatively charged heparin molecule and a large patch of positively charged residues near the lipid A binding site.<sup>3</sup>

Azurocidin has also been identified as a modulator of endothelial permeability. Neutrophils arriving first at sites of inflammation release Azurocidin, which acts in a paracrine fashion on endothelial cells causing the development of intercellular gaps and allowing leukocyte extravation. These findings imply that Azurocidin may be a reasonable therapeutic target for a variety of inflammatory disease conditions.<sup>4</sup>

R&D Systems' recombinant human Azurocidin/CAP37/HBP (residues 27 to 250; Catalog # 2200-SE) has been expressed in a murine myeloma cell line, NS0. The purified rhAzurocidin has an apparent molecular mass of approximately 38 kDa by SDS-PAGE. The activity of rhAzurocidin is measured by its ability to enhance LPS-induced TNF- $\alpha$ /TNFSF1A secretion from human monocytes.<sup>5</sup>

### References

1. Morgan, J.G. *et al.* (1991) *J. Immunol.* **147**:3210.
2. Zimmer, M. *et al.* (1992) *Proc. Natl. Acad. Sci. USA* **89**:8215.
3. Iverson, L.F. *et al.* (1997) *Nat. Struct. Biol.* **4**:265.
4. Gautam, N. *et al.* (2001) *Nat. Med.* **7**:1123.
5. Rasmussen, P.B. *et al.* (1996) *FEBS Lett.* **390**:109.

## Recombinant & Natural Proteins

Protein	Species	Catalog Number	Source	Size
Azurocidin/CAP37/HBP	Human	2200-SE-050	NS0	50 $\mu$ g
• BAFF/BLYS/TNFSF13B	Human	2149-BF-010	NS0	10 $\mu$ g
	Mouse	2106-BF-010	NS0	10 $\mu$ g
C-Reactive Protein	Human	1707-CR-200	NS0	200 $\mu$ g
	Rat	1744-CR-200	NS0	200 $\mu$ g
Carbonic Anhydrase 1	Human	2180-CA-050	<i>E. coli</i>	50 $\mu$ g
Carbonic Anhydrase 2	Human	2184-CA-050	<i>E. coli</i>	50 $\mu$ g
Carbonic Anhydrase 3	Human	2185-CA-050	<i>E. coli</i>	50 $\mu$ g
Carbonic Anhydrase 4	Human	2186-CA-010	NS0	10 $\mu$ g
Carbonic Anhydrase 8	Human	2187-CA-050	<i>E. coli</i>	50 $\mu$ g
Carbonic Anhydrase 9	Human	2188-CA-010	NS0	10 $\mu$ g
Carbonic Anhydrase 10	Human	2189-CA-010	NS0	10 $\mu$ g
Carbonic Anhydrase 12	Human	2190-CA-010	NS0	10 $\mu$ g
Carbonic Anhydrase 13	Human	2194-CA-050	<i>E. coli</i>	50 $\mu$ g
Carbonic Anhydrase 14	Human	2195-CA-010	NS0	10 $\mu$ g
CD84/SLAMF5	Human	1855-CD-050	NS0	50 $\mu$ g
○ CHL1/L1CAM-2	Human	2126-CH-025	NS0	25 $\mu$ g
	Mouse	2147-CH-025	NS0	25 $\mu$ g
◆ Complement Component C1s	Human	2060-SE-010	NS0	10 $\mu$ g
○ Contactin-4	Human	2205-CN-025	NS0	25 $\mu$ g
Crossveinless-2 (CV-2)	Human	1956-CV-050	NS0	50 $\mu$ g
Decorin	Mouse	1060-DE-010	NS0	10 $\mu$ g
EGF	Mouse	2028-EG-200	<i>E. coli</i>	200 $\mu$ g
• Fas/TNFRSF6/Fc Chimera	Rat	2159-FA-050	NS0	50 $\mu$ g
Fc $\gamma$ RIA/CD64	Human	1257-FC-050	NS0	50 $\mu$ g
	Mouse	2074-FC-050	NS0	50 $\mu$ g
FGF basic	Bovine	2099-FB-025	<i>E. coli</i>	25 $\mu$ g
sFRP-4	Human	1827-SF-025	NS0	25 $\mu$ g
GASP-1/WFIKKNRP	Human	2070-GS-025	NS0	25 $\mu$ g
• GITR Ligand/TNFSF18 (aa 47-173)	Mouse	2177-GL-025	NS0	25 $\mu$ g
Glypican 3	Human	2119-GP-050	NS0	50 $\mu$ g
HGF	Mouse	2207-HG-025	NS0	25 $\mu$ g
IL-5	Canine	1964-CL-025	NS0	25 $\mu$ g
IL-12	Canine	2118-CL-025	CHO	25 $\mu$ g
	Rat	1760-RL-010	Sf 21	10 $\mu$ g
IL-12/IL-23 p40	Canine	1969-CL-025	NS0	25 $\mu$ g
	Feline	2117-FL-025	NS0	25 $\mu$ g
IL-12 R $\beta$ 2/Fc Chimera	Human	1959-B2-050	NS0	50 $\mu$ g
IL-17F	Mouse	2057-IL-025	<i>E. coli</i>	25 $\mu$ g
ILT2/CD85j/Fc Chimera	Human	2017-T2-050	NS0	50 $\mu$ g
◆ Kallikrein 4/Prostase	Human	1719-SE-010	NS0	10 $\mu$ g
◆ Kallikrein 8/Neuropsin	Human	2025-SE-010	NS0	10 $\mu$ g
◆ Kallikrein 11	Human	1595-SE-010	NS0	10 $\mu$ g
KGf/FGF-7	Canine	1957-KG-025	<i>E. coli</i>	25 $\mu$ g
◆ Kininogen HMW (HKa)	Mouse	2206-PI-010	NS0	10 $\mu$ g
◆ Legumain/Asparaginyl Endopeptidase	Human	2199-CY-010	NS0	10 $\mu$ g
	Mouse	2058-CY-010	NS0	10 $\mu$ g
LYVE-1	Human	2089-LY-025	NS0	25 $\mu$ g
	Mouse	2125-LY-025	NS0	25 $\mu$ g

## Recombinant & Natural Proteins

Protein	Species	Catalog Number	Source	Size
○ <b>MBL-1</b>	Mouse	2077-MB-050	NS0	50 µg
○ <b>MBL-2</b>	Mouse	2208-MB-050	NS0	50 µg
❖ <b>MMP-9</b>	Human	911-MPN-010	NS0	10 µg
○ <b>NrCAM/Fc Chimera</b>	Human	2034-NR-050	NS0	50 µg
<b>PRDC</b>	Mouse	2069-PR-050	<i>E. coli</i>	50 µg
<b>PTX3/TSG-14</b>	Mouse	2166-TS-025	NS0	25 µg
<b>Thioredoxin</b>	Human	1970-TX-500	<i>E. coli</i>	500 µg
❖ <b>Tryptase ε/BSSP-4</b>	Mouse	2059-SE-010	NS0	10 µg
<b>VEGF-C</b>	Human	2179-VC-025	NS0	25 µg
<b>Wnt-5a</b>	Mouse	645-WN-010	CHO	10 µg

## Polyclonal Antibodies

Antibody	Species	Catalog Number	Type	Size
■ <b>Akt Pan Specific</b>	Human	AF2055	Rabbit IgG	50 µg
■ <b>Akt1</b>	Human/Mouse/Rat	AF1775	Rabbit IgG	50 µg
<b>AMIGO2</b>	Human	AF2080	Goat IgG	100 µg
<b>Angiopoietin-like 2</b>	Human	AF2084	Goat IgG	100 µg
● <b>BAFF/BLyS/TNFSF13B</b>	Mouse	AF2106	Goat IgG	100 µg
<b>BOC</b>	Human	AF2036	Goat IgG	100 µg
■ <b>Brachyury</b>	Human	AF2085	Goat IgG	100 µg
❖ <b>Caspase-8</b>	Human/Mouse	AF705	Goat IgG	100 µg
<b>CBFA1/RUNX2</b>	Human	AF2006	Goat IgG	100 µg
<b>CD43</b>	Human	AF2038	Goat IgG	100 µg
<b>CD46</b>	Human	AF2005	Goat IgG	100 µg
<b>CD55/DAF</b>	Human	AF2009	Goat IgG	100 µg
<b>CD59</b>	Human	AF1987	Goat IgG	100 µg
<b>CD68/SR-D1</b>	Human	AF2040	Goat IgG	100 µg
<b>CD83</b>	Human	AF2044	Goat IgG	100 µg
▲ <b>Phospho-Chk1 (S317)</b>	Human/Mouse/Rat	AF2054	Rabbit IgG	100 µg
○ <b>CLEC-1</b>	Human	AF1704	Goat IgG	100 µg
○ <b>CLEC-2</b>	Human	AF1718	Goat IgG	100 µg
<b>Complement C5a</b>	Human	AF2037	Goat IgG	100 µg
<b>CRIM1</b>	Human	AF1917	Goat IgG	100 µg
❖ <b>Cystatin A</b>	Human	AF1407	Goat IgG	100 µg
❖ <b>Cystatin B</b>	Human	AF1408	Goat IgG	100 µg
<b>DEC-205</b>	Human	AF2047	Goat IgG	100 µg
<b>Endocan</b>	Mouse	AF1999	Goat IgG	100 µg
<b>EphA2</b>	Mouse	AF639	Goat IgG	100 µg
<b>Fcγ RIIB/CD16b</b>	Human	AF1597	Goat IgG	100 µg
<b>FcRH1/IRTA5</b>	Human	AF2049	Goat IgG	100 µg
❖ <b>Furin</b>	Human	AF1503	Goat IgG	100 µg
○ <b>Galectin-4</b>	Mouse	AF2128	Goat IgG	100 µg
○ <b>Galectin-9</b>	Human	AF2045	Goat IgG	100 µg
■ <b>GATA-2</b>	Human	AF2046	Goat IgG	100 µg
◆ <b>GDF-7</b>	Mouse	AF779	Goat IgG	100 µg
◆ <b>GFRα-1</b>	Human	AF714	Goat IgG	100 µg
◆ <b>GFRα-4</b>	Mouse	AF1677	Goat IgG	100 µg

continued on page 4

## CHL1/L1-CAM2

Close homolog of L1 (CHL1), also known as L1-CAM2, is a member of the L1 family of cell adhesion molecules. The molecular structure of the L1 family is characterized by six Ig-like domains at the N-terminus and at least four fibronectin type III repeats. These molecules can be either transmembrane glycoproteins or linked to the cell surface by a glycosylphosphatidylinositol (GPI) anchor. CHL1 is a 185-kDa transmembrane protein that can be proteolytically cleaved to release soluble fragments that are relevant for its physiological function.<sup>1,2</sup> ADAM8, a member of the family of metalloprotease disintegrins, cleaves a CHL1-Fc fusion protein *in vitro*.<sup>2</sup>

CHL1 is expressed by neurons and glia in the central nervous system and by Schwann cells in the peripheral nervous system.<sup>3</sup> It is first expressed at times of neurite outgrowth during development and persists at low levels in the areas of high plasticity in mature brain. It is also upregulated in Schwann cells and sensory neurons upon nerve crush injury.<sup>4</sup> In humans, CHL1 is a candidate gene for 3p-syndrome-associated mental impairment, and a gene polymorphism is associated with increased risk of schizophrenia.<sup>5,6</sup> CHL1-deficient mice display misguided axons within the hippocampus and olfactory tract and also show behavioral abnormalities.<sup>7</sup> *In vitro*, both soluble and substrate-bound CHL1 promote neurite outgrowth and the survival of cerebellar and hippocampal neurons.<sup>8</sup> It also enhances integrin-mediated cell migration toward extracellular matrix proteins, suggesting a possible role in integrin-dependent cell migration during nerve regeneration or development.<sup>9</sup>

### References

1. Holm, J. *et al.* (1996) *Eur. J. Neurosci.* **8**:1613.
2. Naus, S. *et al.* (2004) *J. Biol. Chem.* **279**:16083.
3. Hillenbrand, R. *et al.* (1999) *Eur. J. Neurosci.* **11**:813.
4. Zhang, Y. *et al.* (2000) *Mol. Cell. Neurosci.* **16**:71.
5. Angeloni, D. *et al.* (1999) *Am. J. Med. Genet.* **86**:482.
6. Sakurai, K. *et al.* (2002) *Mol. Psychiatry* **7**:412.
7. Montag-Sallaz, M. *et al.* (2002) *Mol. Cell. Biol.* **22**:7967.
8. Chen, S. *et al.* (1999) *J. Neurobiol.* **38**:428.
9. Buhusi, M. *et al.* (2003) *J. Biol. Chem.* **278**:25024.

## LYVE-1

Hyaluronan (HA), a linear high molecular weight polymer composed of alternating units of D-glucuronic acid and N-acetyl-D-glucosamine, is found in the extracellular matrix of most animal tissues and in body fluids. It modulates cell behavior and has roles in tissue remodeling, development, homeostasis, and disease.<sup>1</sup> The turnover of HA (several grams/day in humans) occurs primarily in the two major clearance systems, the lymphatics and liver, which catabolize approximately 85% and 15%, respectively.<sup>1-3</sup>

LYVE-1 is a receptor of HA that shares significant sequence similarity with the other known receptor, CD44.<sup>4</sup> More specifically, the two proteins are 61% identical within the HA binding domain amino acid sequence. The HA binding domain, termed the link module, is a common structural motif found in other HA binding proteins such as link protein, aggrecan and versican.<sup>1,5</sup>

Expression of LYVE-1 is primarily restricted to lymphatic vessels where it is distributed on both the luminal and abluminal surfaces.<sup>4,5</sup> LYVE-1 mediates the endocytosis of HA and may transport HA from tissue to lymph by transcytosis, delivering HA to lymphatic capillaries for removal and degradation in the regional lymph nodes.<sup>5-7</sup>

Because of its restricted expression patterns, LYVE-1, along with other lymphatic proteins such as VEGF R3, podoplanin and Prox-1, constitute a set of markers useful for distinguishing between lymphatic and blood microvasculature.<sup>4,5,8-10</sup>

### References

- Knudson, C.B. & W. Knudson (1993) *FASEB J.* **7**:1233.
- Evered, D & J. Whelan, J. eds. (1989) *Ciba Found. Symp.* **143**:1.
- Laurent, T. C. & J.R.F. Fraser (1992) *FASEB J.* **6**:2397.
- Banerji, S. *et al.* (1999) *J. Cell Biol.* **144**:789.
- Prevo, R. *et al.* (2001) *J. Biol. Chem.* **276**:19420.
- Jackson, D.J. *et al.* (2001) *Trends Immunol.* **22**:317.
- Zhou, B. *et al.* (2000) *J. Biol. Chem.* **275**:37733.
- Achen, M. *et al.* (1998) *Proc. Natl. Acad. Sci. USA* **95**:548.
- Breiteneder-Gellef, S. *et al.* (1999) *Am. J. Pathol.* **154**:385.
- Wiggle, J.T. & G. Oliver (1999) *Cell* **98**:769.

## Polyclonal Antibodies

Antibody	Species	Catalog Number	Type	Size
<i>continued from page 3</i>				
<b>GGF2</b>	Human	AF2015	Goat IgG	100 µg
<b>GM-CSF</b>	Canine	AF1546	Goat IgG	100 µg
◆ <b>Granzyme D</b>	Mouse	AF1365	Goat IgG	100 µg
■ <b>GSK-3α/β</b>	Human/Mouse/Rat	AF2157	Rabbit IgG	50 µg
<b>HPRG</b>	Human	AF1869	Goat IgG	100 µg
<b>HSP27</b>	Human/Mouse/Rat	AF15801	Goat IgG	50 µg
<b>HSP60</b>	Human/Mouse/Rat	AF1800	Rabbit IgG	50 µg
○ <b>ICAM-5</b>	Human	AF1950	Goat IgG	100 µg
<b>IL-2</b>	Equine	AF1613	Goat IgG	100 µg
<b>IL-5</b>	Feline	AF1795	Goat IgG	100 µg
<b>IL-6</b>	Canine	AF1609	Goat IgG	100 µg
<b>IL-12 Rβ1</b>	Mouse	AF1998	Goat IgG	100 µg
<b>IL-23 p19</b>	Mouse	AF1619	Goat IgG	100 µg
✦ <b>IL-24</b>	Human	AF1965	Goat IgG	100 µg
<b>IL-31 Rα/GLM-R</b>	Mouse	AF2107	Goat IgG	100 µg
<b>ILT4</b>	Human	AF2078	Goat IgG	100 µg
○ <b>Integrin αE/CD103</b>	Mouse	AF1990	Goat IgG	100 µg
◆ <b>Kallikrein 6/Neurosin</b>	Human	AF2008	Goat IgG	100 µg
◆ <b>Kallikrein 10</b>	Human	AF2007	Goat IgG	100 µg
◆ <b>Kell</b>	Human	AF1914	Goat IgG	100 µg
◆ <b>Kininogen</b>	Human	AF1569	Goat IgG	100 µg
● <b>LIGHT/TNFSF14</b>	Mouse	AF1794	Goat IgG	100 µg
<b>LIMPII/SR-B2</b>	Human	AF1966	Goat IgG	100 µg
	Mouse	AF1888	Goat IgG	100 µg
<b>LYVE-1</b>	Human	AF2089	Goat IgG	100 µg
◆ <b>Marapsin/Pancreasin</b>	Human	AF1988	Goat IgG	100 µg
	Mouse	AF1989	Goat IgG	100 µg
<b>MD-2</b>	Human	AF1787	Sheep IgG	100 µg
■ <b>MEK1</b>	Human/Mouse/Rat	AF2079	Goat IgG	100 µg
<b>MIA/CD-RAP</b>	Human	AF2050	Goat IgG	100 µg
■ <b>Nanog</b>	Human	AF1997	Goat IgG	50 µg
<b>NKp30</b>	Human	AF1849	Goat IgG	100 µg
<b>OMgp</b>	Human	AF1673	Goat IgG	100 µg
	Mouse	AF1674	Goat IgG	100 µg
<b>OSCAR</b>	Human	AF2004	Goat IgG	100 µg
■ <b>Otx2</b>	Human	AF1979	Goat IgG	100 µg
■ <b>PNUTS</b>	Human/Mouse/Rat	AF21581	Rabbit IgG	50 µg
<b>PSR</b>	Mouse	AF1994	Goat IgG	100 µg
<b>PTX3/TSG-14</b>	Human	AF1826	Goat IgG	100 µg
<b>Reg 2</b>	Rat	AF1996	Goat IgG	100 µg
<b>Reg IB</b>	Human	AF2090	Goat IgG	100 µg
<b>Reg II</b>	Mouse	AF2035	Goat IgG	100 µg
<b>RGM</b>	Chicken	AF2010	Goat IgG	100 µg
<b>ROR1</b>	Human	AF2000	Goat IgG	100 µg
■ <b>RSK Pan Specific</b>	Human/Mouse/Rat	AF2056	Rabbit IgG	100 µg
<b>S100A9</b>	Mouse	AF2065	Goat IgG	100 µg
<b>Semaphorin 6B</b>	Human	AF2094	Goat IgG	100 µg
<b>Semaphorin 6D</b>	Human	AF2095	Goat IgG	100 µg
◆ <b>Serpin A4/Kallistatin</b>	Human	AF1669	Goat IgG	100 µg
◆ <b>Serpin A5</b>	Human	AF1266	Goat IgG	100 µg

## Polyclonal Antibodies

Antibody	Species	Catalog Number	Type	Size
❖ <b>Serpin C1</b> (aa 33-464)	Human	AF1267	Goat IgG	100 µg
○ <b>Siglec-10</b>	Human	AF2130	Goat IgG	100 µg
○ <b>Siglec-F</b>	Mouse	AF1706	Goat IgG	100 µg
○ <b>SIRP β1</b>	Human	AF2096	Goat IgG	100 µg
■ <b>Smad1</b>	Human	AF2039	Goat IgG	100 µg
■ <b>Smad7</b>	Human	AF2029	Goat IgG	100 µg
■ <b>SOX2</b>	Human	AF2018	Goat IgG	100 µg
■ <b>STAT5a/b</b> Pan Specific	Human/Mouse	AF2168	Rabbit IgG	100 µg
■ <b>STAT6</b> (aa 627-837)	Human/Mouse	AF2167	Goat IgG	100 µg
❖ <b>Thioredoxin</b>	Human	AF1970	Goat IgG	100 µg
○ <b>Thrombopoietin R</b>	Mouse	AF1317	Goat IgG	100 µg
○ <b>TIM-2</b>	Mouse	AF1885	Goat IgG	100 µg
○ <b>TMEFF1</b>	Human	AF1919	Goat IgG	100 µg
○ <b>TMEFF1</b>	Mouse	AF1995	Goat IgG	100 µg
○ <b>TrkB</b>	Mouse	AF1494	Goat IgG	100 µg
○ <b>TSG-6</b>	Human	AF2104	Goat IgG	100 µg
○ <b>ULBP-1</b>	Human	AF1380	Goat IgG	100 µg
○ <b>ULBP-3</b>	Human	AF1517	Goat IgG	100 µg
○ <b>UNC5H4*</b>	Human	AF1429	Goat IgG	100 µg
○ <b>VASA</b>	Human	AF2030	Goat IgG	100 µg
○ <b>Vimentin</b>	Human	AF2105	Goat IgG	100 µg
○ <b>Wnt-10b</b>	Mouse	AF2110	Goat IgG	100 µg

## Monoclonal Antibodies

Antibody	Species	Catalog Number	Clone	Size
○ <b>Aggrecan</b>	Human	MAB1220	179509	500 µg
○ <b>Agrin</b>	Rat	MAB550	76805	500 µg
◆ <b>ALK-1</b>	Mouse	MAB770	143430	500 µg
○ <b>B7-2/CD86</b>	Rat	MAB13401	199622	500 µg
○ <b>BDNF</b>	Human	MAB2481	35909	500 µg
◆ <b>BMP-3</b>	Human	MAB1876	203706	500 µg
○ <b>E-Cadherin</b>	Human	MAB18381	180224	100 µg
○ <b>E-Cadherin</b>	Mouse	MAB7481	114420	100 µg
○ <b>VE-Cadherin</b>	Human	MAB9381	123413	100 µg
■ <b>β-Catenin</b>	Human	MAB13291	196618	100 µg
❖ <b>Cathepsin E</b>	Human	MAB1294	212211	500 µg
○ <b>CD5</b>	Human	MAB1636	205919	500 µg
○ <b>CD23</b>	Human	MAB123	138628	500 µg
○ <b>CD151</b>	Human	MAB1884	210127	500 µg
○ <b>Cerberus 1</b>	Mouse	MAB1986	225807	500 µg
○ <b>Cripto</b>	Mouse	MAB1538	237603	150 µg
○ <b>Cripto</b>	Mouse	MAB15381	237614	500 µg
○ <b>CRTAM</b>	Human	MAB1695	210206	500 µg
○ <b>Cryptic</b>	Human	MAB1410	219708	500 µg
◆ <b>CXCR6</b>	Mouse	MAB2145	221002	500 µg

continued on page 6

## PTX3/TSG-14

Pentraxin 3 (PTX3), also known as tumor necrosis factor stimulated gene 14 (TSG-14), is an acute-phase protein that belongs to the PTX family, which was named for their homo-pentameric structure.<sup>1</sup> PTX3 was initially isolated from TNF-stimulated human fibroblasts and from IL-1 stimulated vascular endothelial cells and identified as a TNF- $\alpha$ /IL-1 $\beta$  inducible gene. The PTX family is divided into two subfamilies: the "short" and the "long" PTXs with molecular weights of 25 kDa and 50 kDa, respectively. PTX3 is the first identified member of the long PTX subfamily, which also includes *Xenopus* XL-PXN1, guinea pig apexin/p50, rat neuronal PTX I (NPI) and NPR, and human neuronal PTXII (NPTX2) and neuronal activity-related PTX.<sup>2</sup>

The C-terminus of mature PTX3 contains a PTX-like domain that shares 23-28% amino acid (aa) sequence similarity with C-reactive protein (CRP) and serum amyloid protein (SAP), which are members of the short PTXs. The N-terminal sequence of PTX3, however, is not significantly similar to any of the short PTXs. Like CRP and SAP, PTX3 binds to the complement cascade component C1q with high affinity.<sup>3</sup> However, it does not bind other known CRP and SAP ligands such as phosphoethanolamine, phosphocholine, or high pyruvate agarose. While CRP and SAP are primarily produced in the liver, PTX3 is produced mainly at the sites of inflammation, suggesting that it may play important roles in responding to infection and inflammation. Its levels are low in normal serum, but are increased under pathological conditions.<sup>4</sup> Increased expression of PTX3 may enhance the immune response to protect the host from infection. PTX3 also regulates the uptake and clearance of apoptotic cells by dendritic cells,<sup>5</sup> and plays important roles in innate immunity, anti-microbial defense, and female fertility.<sup>4</sup>

### References

- Osmand, A.P. *et al.* (1977) *Proc. Natl. Acad. Sci. USA.* **74**:739.
- Goodman, A.R. *et al.* (1996) *Cytokine Growth Factor Rev.* **7**:191.
- Bottazzi, B. *et al.* (1997) *J. Biol. Chem.* **272**:32817.
- Wisniewski, H.G. & J. Vilcek (2004) *Cytokine Growth Factor Rev.* **15**:129.
- Rovere, P. *et al.* (2000) *Blood* **96**:4300.

\*This product is covered under one or more patents owned by the Regents of the University of California.

## Mycoprobe™ Mycoplasma Detection Kit

R&D Systems' new MycoProbe Mycoplasma Detection Kit represents a breakthrough for high-throughput, routine screening of cell cultures for mycoplasma contamination. Mycoplasma contamination is one of the most common and serious problems in culturing eukaryotic cells because it alters the phenotypic characteristics of the cells and can negatively impact results. Since mycoplasma is typically not visible and does not respond to antibiotics, an alternative, sensitive and reliable detection method is required. This assay is capable of detecting the eight mycoplasma species known to cause 95% of eukaryotic cell culture contamination (*M. hyorhinis*, *M. arginini*, *M. fermentans*, *M. orale*, *M. pirum*, *M. hominis*, *M. salivarium*, and *A. laidlawii*).

### Assay Features

- High-throughput screening (microplate-based) assay
- No false positives from amplicon contamination
- High sensitivity (comparable to PCR)
- Passage in antibiotic-free media is not required
- Fresh or frozen cell pellet or supernate samples may be used
- Results in 4.5 hours
- Reagents sufficient for 96 tests

### Kit Contents

- Cell Lysis Buffer
- Conjugate
- Streptavidin Capture Plate
- Hybridization Plate
- Substrate/Amplifier
- Diluents
- Positive Control
- Pan-Specific Oligonucleotide Probes
- Wash Buffer
- Protocol Manual

Each kit is sufficient to run up to 96 tests.  
Tests can be run individually or in combination.

CFU*	R&D Systems' MycoProbe Mycoplasma Detection Kit	PCR
15,000	+	+
1,500	+	+
150	+	+
15	+	+

**Table 1.** Comparison of R&D Systems' Mycoplasma Detection Assay (Catalog # CUL001) with a commercially available PCR-based mycoplasma detection kit. Serial dilutions of *M. arginini* were produced in lysis buffer.

\*CFU = Colony Forming Units per well or PCR reaction.

For more information, please visit  
[www.RnDSystems.com/Mycoplasma](http://www.RnDSystems.com/Mycoplasma)

## Monoclonal Antibodies

Antibody	Species	Catalog Number	Clone	Size
<i>continued from page 5</i>				
○ <b>Dectin-2α</b>	Mouse	MAB1525	217611	500 µg
<b>Desert Hedgehog N-Terminal Peptide (Dhh-N)</b>	Mouse	MAB733	126925	500 µg
<b>Dkk-1</b>	Human	MAB1096	141119	500 µg
<b>Dkk-3</b>	Human	MAB1118	138726	500 µg
<b>EDG-1</b>	Human	MAB2016	218713	500 µg
<b>Endoglin/CD105</b>	Human	MAB10972	166713	500 µg
<b>EphA2</b>	Mouse	MAB639	233720	500 µg
<b>Ephrin-A4</b>	Mouse	MAB569	132416	500 µg
<b>FABP1</b>	Rat	MAB1565	220119	100 µg
● <b>Fas Ligand/TNFSF6</b>	Human	MAB095	100413	500 µg
<b>Fetuin B</b>	Human	MAB1725	212621	500 µg
<b>FGF-5</b>	Human	MAB237	221907	500 µg
<b>FGF-11</b>	Human	MAB1634	224812	500 µg
<b>FGF R4</b>	Human	MAB6852	240929	100 µg
<b>FGF R5β</b>	Mouse	MAB1899	223003	500 µg
<b>FGF-BP</b>	Rat	MAB1413	227239	500 µg
<b>sFRP-3</b>	Human/Mouse	MAB192	133912	500 µg
■ <b>GATA-5</b>	Human	MAB2170	250311	100 µg
◆ <b>Granzyme G</b>	Mouse	MAB1346	207639	500 µg
<b>H60</b>	Mouse	MAB1155	205326	500 µg
<b>Hepassocin</b>	Human	MAB1614	198401	500 µg
<b>HGF R (c-MET)</b>	Mouse	MAB5271	118627	500 µg
<b>HPRG</b>	Human	MAB1869	227901	500 µg
○ <b>ICAM-1/CD54</b>	Mouse	MAB796	166623	500 µg
	Rat	MAB5832	141017	500 µg
○ <b>ICAM-2/CD102</b>	Human	MAB244	86911	500 µg
⊕ <b>IFN-α/β R2</b>	Human	21385-1	MMHAR-2	50 µg
<b>IL-2 Rα</b>	Human	MAB1020	24212	500 µg
<b>IL-9</b>	Mouse	MAB409	222604	500 µg
<b>IL-9 R</b>	Mouse	MAB2134	224325	500 µg
<b>IL-11</b>	Mouse	MAB4181	188507	500 µg
<b>IL-13 Rα2</b>	Human	MAB6141	83807	500 µg
<b>IL-16</b>	Mouse	MAB1727	228109	500 µg
⊕ <b>IL-20 Rα</b>	Human	MAB11761	173707	500 µg
	Mouse	MAB1736	227702	500 µg
<b>IL-23 R</b>	Human	MAB1400	218209	500 µg
⊕ <b>IL-24</b>	Human	MAB1965	244202	500 µg
<b>IL-27</b>	Mouse	MAB1834	234205	500 µg
<b>Insulin R/CD220</b>	Human	MAB1544	243524	100 µg
○ <b>Integrin α5/CD49e</b>	Mouse	MAB1754	235112	100 µg
○ <b>Integrin αM/CD11b</b>	Human	MAB16991	238446	100 µg
■ <b>JNK Pan Specific</b>	Human/Mouse/Rat	MAB1387	252355	100 µg
■ <b>JNK1/JNK2</b>	Human/Mouse/Rat	MAB2076	252323	100 µg
■ <b>JNK2</b>	Human/Mouse/Rat	MAB1846	252320	100 µg
<b>KIR2DL3</b>	Human	MAB2014	180701	500 µg
<b>KIR3DL1</b>	Human	MAB12251	177407	500 µg
<b>Laminin S</b>	Human/Rat/Chicken	MAB2066	C4	100 µg
<b>LECT2</b>	Human	MAB722	102717	500 µg
<b>Leptin R</b>	Human	MAB389	52208	500 µg
<b>LIMPII/SR-B2</b>	Mouse	MAB1888	220411	500 µg
<b>LOX-1/SR-E1</b>	Mouse	MAB1564	214012	500 µg

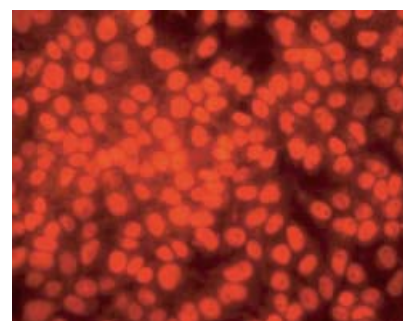
# Monoclonal Antibodies

Antibody	Species	Catalog Number	Clone	Size
● <b>Lymphotoxin βR/TNFRSF3</b>	Human	MAB629	71319	500 µg
	Mouse	MAB1008	157105	500 µg
● <b>M-CSF R</b>	Human	MAB3291	61701	500 µg
	Human	MAB3292	61715	500 µg
○ <b>MAdCAM-1</b>	Mouse	MAB993	200531	500 µg
● <b>Mer</b>	Human	MAB8912	125518	500 µg
● <b>MICB</b>	Human	MAB1599	236511	500 µg
◆ <b>MIS/AMH</b>	Human	MAB1737	213816	500 µg
◆ <b>Pro-MMP-9</b>	Mouse	MAB9092	116134	500 µg
● <b>MuSK</b>	Rat	MAB562	78020	500 µg
● <b>Neogenin*</b>	Mouse	MAB1079	221519	500 µg
● <b>Netrin-G1a*</b>	Mouse	MAB1166	229722	500 µg
◆ <b>Nodal</b>	Mouse	MAB1315	209009	500 µg
● <b>NT-4</b>	Human	MAB2681	36507	500 µg
■ <b>Oct-3/4</b>	Human	MAB1759	240408	100 µg
● <b>Osteopontin (OPN)</b>	Human	MAB14331	223126	500 µg
● <b>Osteoprotegerin/TNFRSF11B</b>	Mouse	MAB4591	110511	500 µg
● <b>OV-6</b>	Human/Rat	MAB2020	OV-6	100 µg
■ <b>PKR</b>	Human	MAB1980	HL71/10	100 µg
◆ <b>Presenilin-1 NTF</b>	Human	MAB1491	121130	500 µg
● <b>Prolactin R</b>	Rat	MAB11121	218623	500 µg
● <b>Prominin 2</b>	Human	MAB2024	244029	100 µg
● <b>RAGE</b>	Human	MAB11451	176902	500 µg
	Mouse/Rat	MAB1179	175410	500 µg
● <b>RANK/TNFRSF11A</b>	Mouse	MAB692	100024	500 µg
● <b>RELMα</b>	Mouse	MAB1523	226033	500 µg
● <b>ROR2</b>	Human	MAB2064	231512	500 µg
■ <b>SHP-2</b>	Human/Mouse/Rat	MAB1894	255509	200 µg
● <b>SIGIRR</b>	Human	MAB990	162201	500 µg
○ <b>Siglec-5</b>	Human	MAB10721	194128	500 µg
◆ <b>SLPI</b>	Human	MAB1274	20409	500 µg
● <b>Sonic Hedgehog C-Terminal Peptide (Shh-C)</b>	Mouse	MAB445	55626	500 µg
■ <b>SOX2</b>	Human	MAB2018	245610	100 µg
■ <b>SSEA-1</b>	Human/Mouse	MAB2155	MC-480	100 µg
■ <b>STAT5a</b>	Human/Mouse	MAB2174	251619	100 µg
■ <b>STAT6</b>	Human/Mouse	MAB2167	253906	100 µg
	Mouse	MAB2169	69727	100 µg
◆ <b>Survivin</b>	Human	MAB886	91630	100 µg
■ <b>TC-PTP</b>	Human/Mouse/Rat	MAB1930	252294	100 µg
● <b>Tenascin C</b>	Human/Mouse/Rat	MAB2138	578	100 µg
◆ <b>TGF-β RI/ALK-5</b>	Mouse	MAB587	141229	500 µg
◆ <b>TGF-β RIII</b>	Human	MAB242	31349	500 µg
● <b>TIM-2</b>	Mouse	MAB1885	222919	500 µg
● <b>TREM-2b</b>	Mouse	MAB1729	237916	500 µg
● <b>TrkA</b>	Human	MAB1751	165131	500 µg
● <b>TrkB</b>	Human	MAB3971	72509	500 µg
	Mouse	MAB1494	225105	500 µg
● <b>TrkC</b>	Human	MAB3731	75213	500 µg
	Mouse	MAB1404	227403	500 µg
● <b>Ubiquitin+1</b>	Human	MAB7031	83456	500 µg
● <b>ULBP-3</b>	Human	MAB15171	166514	500 µg
● <b>VEGF R1 (Flt-1)</b>	Mouse	MAB4711	141522	500 µg
● <b>WISP-1/CCN4</b>	Mouse	MAB1680	214203	500 µg

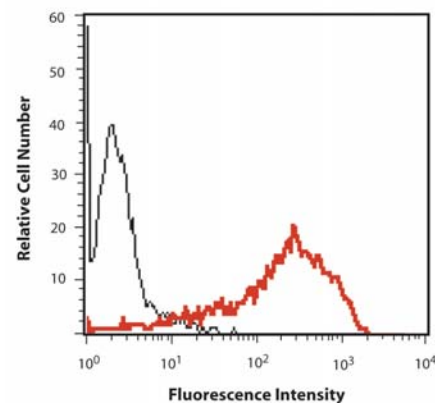
\*This product is covered under one or more patents owned by the Regents of the University of California.

## Stem Cell Marker Antibodies

Embryonic stem (ES) cells, derived from the inner cell mass of pre-implantation embryos, have been recognized as the most pluripotent stem cell population. Human ES cells can be maintained and propagated on mouse fibroblast feeders for extended periods of time in media containing FGF basic. While the undifferentiated/pluripotent state of ES cells can be best defined functionally, a number of molecular markers have also been used to characterize it. R&D Systems offers a collection of antibodies to ES cell markers.



**Figure 1.** Detection of Nanog in human NTERA-2 cells using R&D Systems' goat anti-human Nanog affinity-purified polyclonal antibody (Catalog # AF1997). Cells were stained using a Rhodamine Red-conjugated donkey anti-goat IgG secondary antibody.



**Figure 2.** Reactivity of SSEA-1 on mouse D3 embryonic stem cells using R&D Systems' mouse anti-human/mouse SSEA-1 monoclonal antibody (Catalog # MAB2155). Cells were stained using a PE-conjugated anti-mouse IgM secondary antibody (red). Control staining is shown in black.

For more information or a complete listing of R&D Systems' Stem Cell Products, please visit [www.RnDSystems.com/StemCell](http://www.RnDSystems.com/StemCell)

## Tryptase $\epsilon$ /BSSP-4

Tryptase  $\epsilon$ , also known as brain specific serine protease 4 (BSSP-4) and brain serine protease 2 (BSP-2), is encoded by the PRSS22 gene. Initially identified as having brain-specific expression, mouse Tryptase  $\epsilon$  is preferentially expressed in epithelium-rich tissues such as the lung and eye, similar to its human counterpart. The mouse Tryptase  $\epsilon$  amino acid sequence is composed of a signal peptide (residues 1 to 32), a pro peptide (residues 33 to 49) and a mature chain (residues 50 to 306) corresponding to the serine protease domain.<sup>1-5</sup>

R&D Systems' recombinant mouse Tryptase  $\epsilon$  (Catalog # 2059-SE) has been expressed as the full-length protein (residues 1 to 306) in a murine myeloma cell line, NS0. By SDS-PAGE analysis, the purified rmTryptase  $\epsilon$  has two apparent molecular masses of approximately 37 kDa (major band) and 33 kDa (minor band), which may correspond to glycosylated and non-glycosylated forms. After activation with thermolysin, rmTryptase  $\epsilon$  displays low activity against peptide substrates tested, but high activity against thioester substrates. Thioester activity is inhibited by 2 mM AEBSEF, a general serine protease inhibitor.

### R&D Systems' rmTryptase $\epsilon$ /BSSP-4 activity assay

Please see specific package insert for further details.

#### Activation Conditions

Preincubate rmTryptase  $\epsilon$  at 100  $\mu$ g/mL with thermolysin at 0.2  $\mu$ g/mL in TCN (50 mM Tris, 10 mM CaCl<sub>2</sub>, 150 mM NaCl, pH 7.5) for 30 min at 37 °C. Stop thermolysin activity with 40  $\mu$ M phosphoramidon.

#### Assay Conditions

Incubate 20 ng rmTryptase  $\epsilon$  and 100  $\mu$ M Z-R-SBzl in 100  $\mu$ L of 50 mM Tris, 0.25 M NaCl, pH 8.0, containing 100  $\mu$ M DTNB at room temperature.

#### Specific Activity

>6,000 pmoles/min/ $\mu$ g

### References

- Davies, B.J. *et al.* (1998) *J. Biol. Chem.* **273**:23004.
- Wong, G.W. *et al.* (2001) *J. Biol. Chem.* **276**:49169.
- Wong, G.W. *et al.* (2004) *J. Biol. Chem.* **279**:2438.
- Shibata, K. *et al.* (2000) *Genome Res.* **10**:1757.
- Carninci, P. *et al.* (2000) *Genome Res.* **10**:1617.

For more information or a complete listing of R&D Systems' Protease products, please visit [www.RnDSYSTEMS.com/Protease](http://www.RnDSYSTEMS.com/Protease)

## Labeled Antibodies

### Biotinylated Antibodies

Antibody	Species	Catalog Number	Type	Size
<b>BLAME/SLAMF8</b>	Human	BAF1907	Goat IgG	50 $\mu$ g
■ <b>Brachyury</b>	Human	BAF2085	Goat IgG	50 $\mu$ g
<b>CD2</b>	Human	BAF1856	Goat IgG	50 $\mu$ g
<b>CD47</b>	Human	BAF1866	Goat IgG	50 $\mu$ g
<b>CD84/SLAMF5</b>	Human	BAF1855	Goat IgG	50 $\mu$ g
<b>CD229/SLAMF3</b>	Human	BAF1898	Goat IgG	50 $\mu$ g
○ <b>CLEC-1</b>	Human	BAF1704	Goat IgG	50 $\mu$ g
<b>CRIM1</b>	Human	BAF1917	Goat IgG	50 $\mu$ g
<b>Cryptic</b>	Mouse	BAF1840	Goat IgG	50 $\mu$ g
◆ <b>CXCL8/IL-8</b>	Canine	BAF1608	Goat IgG	50 $\mu$ g
❖ <b>Cystatin B</b>	Human	BAF1408	Goat IgG	50 $\mu$ g
● <b>DcTRAIL R2/TNFRSF22</b>	Mouse	BAF1816	Goat IgG	50 $\mu$ g
○ <b>Dectin-1/CLECSF12</b>	Human	BAF1859	Goat IgG	50 $\mu$ g
<b>EMAP-II</b>	Human	BAF1910	Goat IgG	50 $\mu$ g
<b>Endocan</b>	Human	BAF1810	Goat IgG	50 $\mu$ g
● <b>Fas Ligand/TNFSF6</b>	Rat	BAF1889	Goat IgG	50 $\mu$ g
<b>FLRG</b>	Human	BAF1288	Goat IgG	50 $\mu$ g
❖ <b>Furin</b>	Human	BAF1503	Goat IgG	50 $\mu$ g
○ <b>Galectin-2</b>	Human	BAF1153	Goat IgG	50 $\mu$ g
■ <b>GATA-2</b>	Human	BAF2046	Goat IgG	50 $\mu$ g
◆ <b>GFR<math>\alpha</math>-1</b>	Human	BAF714	Goat IgG	50 $\mu$ g
<b>GM-CSF</b>	Canine	BAF1546	Goat IgG	50 $\mu$ g
❖ <b>Granzyme D</b>	Mouse	BAF1365	Goat IgG	50 $\mu$ g
<b>HRPG</b>	Human	BAF1869	Goat IgG	50 $\mu$ g
	Mouse	BAF1905	Goat IgG	50 $\mu$ g
<b>HRP-1</b>	Mouse	BAF1868	Goat IgG	50 $\mu$ g
<b>IL-1 R4/ST2L</b>	Mouse	BAF1004	Goat IgG	50 $\mu$ g
<b>IL-6</b>	Canine	BAF1609	Goat IgG	50 $\mu$ g
+ <b>IL-20 R<math>\beta</math></b>	Human	BAF1788	Goat IgG	50 $\mu$ g
+ <b>IL-24</b>	Human	BAF1965	Goat IgG	50 $\mu$ g
<b>IL-27 p28</b>	Mouse	BAF1834	Goat IgG	50 $\mu$ g
+ <b>IL-28A/IFN-<math>\gamma</math>2</b>	Human	BAF1587	Goat IgG	50 $\mu$ g
+ <b>IL-29</b>	Human	BAF1598	Goat IgG	50 $\mu$ g
○ <b>Integrin <math>\alpha</math>M/CD11b</b>	Human	BAM1699	Mouse IgG <sub>1</sub>	100 $\mu$ g
○ <b>Integrin <math>\beta</math>2/CD18</b>	Human	BAF1730	Goat IgG	50 $\mu$ g
<b>Klotho</b>	Mouse	BAF1819	Goat IgG	50 $\mu$ g
<b>Kremen-1</b>	Mouse	BAF1647	Goat IgG	50 $\mu$ g
● <b>LIGHT/TNFSF14</b>	Mouse	BAF1794	Goat IgG	50 $\mu$ g
<b>LIMPII/SR-B2</b>	Mouse	BAF1888	Goat IgG	50 $\mu$ g
❖ <b>Lipocalin-2/NGAL</b>	Mouse	BAF1857	Goat IgG	50 $\mu$ g
◆ <b>MCP-1/CCL2</b>	Canine	BAF1774	Goat IgG	50 $\mu$ g
<b>MFRP</b>	Human	BAF1915	Goat IgG	50 $\mu$ g
<b>NKp80/KLRF1</b>	Human	BAF1900	Sheep IgG	50 $\mu$ g
<b>Nope</b>	Mouse	BAF1394	Goat IgG	50 $\mu$ g
<b>NOV/CCN3</b>	Mouse	BAF1976	Goat IgG	50 $\mu$ g
<b>NTB-A/SLAMF6</b>	Human	BAF1908	Goat IgG	50 $\mu$ g
<b>OMgp</b>	Mouse	BAF1674	Goat IgG	50 $\mu$ g
■ <b>Otx2</b>	Human	BAF1979	Goat IgG	50 $\mu$ g
▲ <b>p21/CIP1/CDKN1A</b>	Human	BAF1047	Goat IgG	50 $\mu$ g
<b>PLUNC</b>	Human	BAF1897	Goat IgG	50 $\mu$ g
<b>SCGF</b>	Human	BAF1904	Goat IgG	50 $\mu$ g
<b>Semaphorin 7A</b>	Mouse	BAF1835	Goat IgG	50 $\mu$ g

## Labeled Antibodies

### Biotinylated Antibodies

Antibody	Species	Catalog Number	Type	Size
❖ <b>Serpin A5</b>	Human	BAF1266	Goat IgG	50 µg
❖ <b>Serpin C1</b>	Human	BAF1267	Goat IgG	50 µg
○ <b>Siglec-5</b>	Human	BAM10722	Mouse IgG <sub>1</sub>	250 µg
○ <b>SIGNR1/CD209</b>	Mouse	BAF1836	Goat IgG	50 µg
<b>SOST</b>	Mouse	BAF1589	Goat IgG	50 µg
■ <b>SOX2</b>	Human	BAF2018	Goat IgG	50 µg
■ <b>SOX17</b>	Human	BAF1924	Goat IgG	50 µg
<b>TIM-1</b>	Mouse	BAF1817	Goat IgG	50 µg
<b>TIM-2</b>	Mouse	BAF1885	Goat IgG	50 µg
<b>TMEFF2</b>	Human	BAF1867	Goat IgG	50 µg
● <b>TNF-α/TNFSF1A</b>	Canine	BAF1507	Goat IgG	50 µg
<b>TREM-2</b>	Human	BAF1828	Goat IgG	50 µg
<b>TrkB</b>	Mouse	BAF1494	Goat IgG	50 µg
<b>Ubiquitin+1</b>	Human	BAM7032	Mouse IgG <sub>2B</sub>	250 µg
<b>UNC5H4*</b>	Human	BAF1429	Goat IgG	50 µg
<b>WIF-1</b>	Mouse	BAF135	Goat IgG	50 µg

### Fluorochrome-labeled Antibodies

Antibody	Species	Catalog Number	Label	Size
❖ <b>ACE</b>	Human	FAB929P	Phycoerythrin	100 Tests
<b>Alkaline Phosphatase</b>	Human/Mouse/Rat	FAB1448A	Allophycocyanin	100 Tests
<b>B220</b>	Mouse	FAB1217A	Allophycocyanin	100 Tests
<b>CD3<sub>ε</sub></b>	Human	FAB100A	Allophycocyanin	100 Tests
	Human	FAB100F	Fluorescein	100 Tests
<b>CD151</b>	Human	FAB1884P	Phycoerythrin	100 Tests
<b>CD163</b>	Human	FAB1607A	Allophycocyanin	100 Tests
❖ <b>DPPIV/CD26</b>	Mouse	FAB9541A	Allophycocyanin	100 Tests
	Mouse	FAB9541F	Fluorescein	100 Tests
	Mouse	FAB9541P	Phycoerythrin	100 Tests
● <b>GITR/TNFRSF18</b>	Human	FAB689A	Allophycocyanin	100 Tests
<b>IL-2 R<sub>α</sub></b>	Human	FAB1020P	Phycoerythrin	100 Tests
<b>IL-5</b>	Human	IC2052F	Fluorescein	100 Tests
○ <b>Integrin α4/CD49d</b>	Human	FAB1354A	Allophycocyanin	100 Tests
	Human	FAB1354P	Phycoerythrin	100 Tests
○ <b>Integrin αM/CD11b</b>	Mouse	FAB1124A	Allophycocyanin	100 Tests
○ <b>Integrin β2/CD18</b>	Human	FAB1730P	Phycoerythrin	100 Tests
<b>Mer</b>	Human	FAB8912A	Allophycocyanin	100 Tests
	Human	FAB8912P	Phycoerythrin	100 Tests
<b>Rae-1</b>	Mouse	FAB17582P	Phycoerythrin	100 Tests
<b>uPAR</b>	Human	FAB807P	Phycoerythrin	100 Tests

### Antibody Controls

Antibody	Species	Catalog Number	Clone	Size
<b>IgG<sub>1</sub></b>	Rat	IC005B	43414	50 µg
<b>IgG<sub>2A</sub></b>	Rat	IC006B	54447	50 µg
<b>IgG<sub>2B</sub></b>	Rat	IC013B	141945	50 µg
<b>IgG</b>	Rat	AF005		500 µg
<b>IgY</b>	Chicken	AF010		500 µg

\*This product is covered under one or more patents owned by the Regents of the University of California.

## VEGF-C

VEGF-C and -D compose a subgroup within the VEGF family due to their similarity to each other (48% identity at the amino acid level) and due to differences in processing, structure, and receptor binding relative to other family members. VEGF-C and -D preferentially form non-covalent homodimers. Neither VEGF-C nor VEGF-D undergo the alternative splicing that leads to the formation of multiple isoforms of VEGF-A and -B. Rather, the VEGF-C propeptide undergoes stepwise intra- and extracellular proteolytic processing to yield the fully-processed mature VEGF homology domain dimer. VEGF-C and -D also have the same receptor-binding profiles, as both bind to VEGF R2 (also known as KDR and Flk-1) and VEGF R3 (Flk-4).<sup>1-3</sup> The mature form of VEGF-C has a higher binding affinity for VEGF R3 than for VEGF R2. Via its interaction with VEGF R2, VEGF-C promotes vascular permeability and angiogenesis, while its interaction with VEGF R3 stimulates lymphangiogenesis.<sup>2,4,5</sup>

VEGF-C mRNA is present in several adult human tissues including lymph nodes, heart, placenta, ovary, and small intestine. Lower levels are also found in lung, muscle, pancreas, spleen, prostate, testis and colon.<sup>1</sup> VEGF-C expression is elevated in several types of human cancer, including breast cancer and colorectal carcinoma.<sup>6,7</sup> Overexpression of VEGF-C promotes tumor angiogenesis as well as lymphangiogenesis, thus resulting in enhanced lymphatic metastasis.

R&D Systems' wild-type recombinant human VEGF-C protein (Thr103 - Arg227; Catalog # 2179-VC) has been expressed in a mouse myeloma cell line, NS0. Purified rhVEGF-C has an apparent molecular mass of approximately 23 kDa by SDS-PAGE. The activity of rhVEGF-C is measured by its ability to stimulate 3H-thymidine incorporation in human microvascular endothelial cells.<sup>8</sup>

#### References

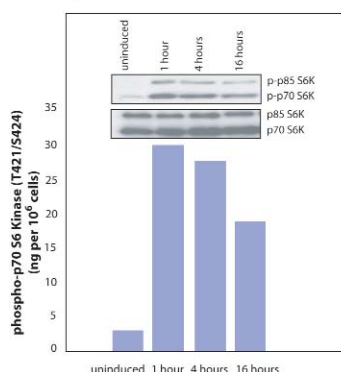
- Joukov, V. *et al.* (1996) *EMBO J.* **15**:290.
- Joukov, V. *et al.* (1997) *EMBO J.* **16**:3898.
- Lee, J. *et al.* (1996) *Proc. Natl. Acad. Sci. USA* **93**:1988.
- Jeltsch, M. *et al.* (1997) *Science* **276**:1423.
- Cao, Y. *et al.* (1998) *Proc. Natl. Acad. Sci.* **95**:14389.
- Akagi, K. *et al.* (2000) *Br. J. Cancer* **83**:887.
- Skobe, M. *et al.* (2001) *Nature Med.* **2**:192.
- Marconcini, L. *et al.* (1999) *Proc. Natl. Acad. Sci. USA* **96**:9671.

## Phospho-p70 S6 Kinase (T421/S424) DuoSet® IC ELISA

Activated by insulin, EGF, and other mitogens, p70 S6 Kinase (p70 S6K) was among the first Ser/Thr kinases to be identified. Critical for cell growth and cell cycle progression, active p70 S6K upregulates mRNA translation by phosphorylating the ribosomal protein S6 at multiple sites.<sup>1</sup> Phosphorylated S6 stimulates the translation of mRNAs containing an oligopyrimidine tract at their transcriptional start site, typically encoding ribosomal proteins and elongation factors.<sup>2</sup>

The activity of p70 S6K is controlled by multiple phosphorylation events, with phosphorylation at Thr229 by PDK1<sup>3</sup> and Thr389 by mTOR<sup>4</sup> most critical for kinase function. Phosphorylation at Thr421 and Ser424 in the C-terminal tail, presumably by MAP Kinases, appears to enhance activation by both relieving pseudo-substrate autoinhibition<sup>5</sup> and facilitating the access of upstream kinases to p70 S6K.<sup>6</sup>

Quantification of phosphorylated p70 S6K and p85 S6K in IGF-I treated human MCF-7 cells



**Figure 1.** MCF-7 cells were treated with IGF-I (100 ng/mL) for the indicated times. Cells were lysed and either quantified using R&D Systems' phospho-p70 S6 Kinase (T421/S424) DuoSet IC ELISA (Catalog # DYC8965) or immunoblotted using R&D Systems' rabbit anti-phospho-p70 S6K (T421/S424) or anti-p70 S6K polyclonal antibodies (Catalog # AF8965 and AF8962, respectively). The DuoSet IC ELISA results correlate well with the relative amounts of phosphorylated p70 S6K and the related isoform p85 S6K detected by Western blot. The immunoblot with anti-p70 S6K antibody indicates that total levels of p70 S6K and p85 S6K remained constant during incubations with IGF-I.

### References

- Pullen, N. & G. Thomas (1997) FEBS Lett. **410**:78.
- Jefferies, H. *et al.* (1997) EMBO J. **16**:3693.
- Pullen, N. *et al.* (1998) Science **279**:707.
- Isotani, S. *et al.* (1999) J. Biol. Chem. **274**:34493.
- Han, J. *et al.* (1995) J. Biol. Chem. **270**:21396.
- Weng, Q. *et al.* (1998) J. Biol. Chem. **273**:16621.

For more information or a complete listing of R&D Systems' Signal Transduction Products, please visit [www.RnDSystems.com/SignalTrans](http://www.RnDSystems.com/SignalTrans)

## ELISA & Activity Assay Development Kits

### DuoSet® ELISA Development Systems

Product	Species	Catalog Number	Reagents for*
◆ ACE	Human	DY929	15 Plates
○ BCAM	Human	DY148	15 Plates
○ E-Cadherin	Human	DY648	15 Plates
◆ CCL23/MPIF-1	Human	DY131	15 Plates
◆ Endoglin/CD105	Human	DY1097	15 Plates
Endostatin	Human	DY1098	15 Plates
Flt-3 Ligand	Mouse	DY427	15 Plates
Gas6	Human	DY885	15 Plates
IL-7	Mouse	DY407	15 Plates
IL-11	Mouse	DY418	15 Plates
IL-15	Mouse	DY447	15 Plates
IL-18 BPa	Human	DY119	15 Plates
◆ Presenilin-1 NTF	Human	DY149	15 Plates

\*Also available in 45 plate Economy Packs.

### DuoSet® IC Intracellular ELISAs & Activity Assays

Product	Species	Catalog Number	Reagents for*
■ Phospho-ErbB4	Human	DYC2115-2	2 Plates
■ Total ERK1	Human	DYC1940-2	2 Plates
■ Active HIF-1α	Human/Mouse	DYC1536-2	2 Plates
■ Total IGF-1 R	Human	DYC305-2	2 Plates
■ Total JNK1	Human/Mouse/Rat	DYC1776-2	2 Plates
■ Phospho-p38δ (T180/Y182)	Human	DYC2124-2	2 Plates
■ Total p70 S6 Kinase	Human/Mouse/Rat	DYC8962-2	2 Plates
■ Phospho-p70 S6 Kinase (T421/S424)	Human/Mouse/Rat	DYC8965-2	2 Plates
■ Active STAT2	Human	DYC1666-2	2 Plates
■ Active STAT3	Human/Mouse	DYC1799-2	2 Plates

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

## Stem Cell Kits

Product	Species	Catalog Number	Size
Mesenchymal Stem Cell Functional Identification Kit	Human	SC006	1 Kit
Methylcellulose Enriched Media	Human	HSC005	100 mL

## Fluorokine® Receptor Detection Kit

Antibody	Species	Catalog Number	Size
◆ CCL17/TARC	Mouse	NFMTC0	1 Kit

These products are for research use only. Not for use in humans.

● TNF Superfamily  
◆ Chemokines & Receptors

■ Signal Transduction  
▲ DNA Damage & Repair

○ Adhesion Molecules/Lectins  
◆ TGF-β Superfamily

✦ IL-10/Interferon Family  
✦ Proteases & Inhibitors

## Caspase Inhibitors

Inhibitor	Catalog Number	Size
❖ Pan Caspase Inhibitor Q-VD-OPH Non-omethylated	OPH001-01M OPH001-05M	1 mg 5x1 mg

## Cell Culture Reagents

Product	Catalog Number	Size
Mycoprobe™ Mycoplasma Detection Kit	CUL001	96 Tests

## Primer Pairs

Product	Species	Catalog Number	Size
◆ CCR6	Mouse/Rat	RDP-299-025	25 Tests
● CD27/TNFRSF7	Human	RDP-301-025	25 Tests
● CD27 Ligand/TNFSF7	Mouse	RDP-302-025	25 Tests
● CD30/TNFRSF8	Human	RDP-303-025	25 Tests
	Mouse/Rat	RDP-304-025	25 Tests
● CD30 Ligand/TNFSF8	Human	RDP-305-025	25 Tests
● CD40/TNFRSF5	Human	RDP-306-025	25 Tests
● CD40 Ligand/TNFSF5	Human	RDP-307-025	25 Tests
	Mouse/Rat	RDP-308-025	25 Tests
Common β Chain	Human	RDP-296-025	25 Tests
◆ I-TAC/CXCL11	Mouse	RDP-298-025	25 Tests
IL-5 Rα	Human	RDP-294-025	25 Tests
IL-12 p35	Human	RDP-293-025	25 Tests
IL-18 Rα/IL-1 R5	Human	RDP-295-025	25 Tests
❖ Separate	Mouse	RDP-297-025	25 Tests
◆ TGF-β3	Human/Mouse/Rat	RDP-300-025	25 Tests

## Fluorokine® MAP Multiplex Reagents

A basic understanding of immunoassay development is required. This is not a validated assay. These products are designed for use with the Luminex® 100™ Analyzer.

Product	Bead Region	Catalog #	Reagents for
Multiplex Assay Accessory Pack	NA	LDS000	1 Plate
Goat anti-mouse IgG Coated Microparticle Packs	Region 05	LDS001	100 Tests
	Region 07	LDS002	100 Tests
	Region 20	LDS003	100 Tests
	Region 32	LDS004	100 Tests
	Region 37	LDS005	100 Tests
	Region 51	LDS006	100 Tests
	Region 58	LDS007	100 Tests
	Region 75	LDS008	100 Tests
	Region 78	LDS009	100 Tests
	Region 80	LDS010	100 Tests

5 microparticle packs of the same region are available.

Luminex is a registered trademark of the Luminex Corporation. Luminex 100 is a trademark of Luminex Corporation.

## Fluorokine® MAP Multiplex Reagents

R&D Systems now offers products for the development of user-defined microparticle-based multiplex immunoassays. The accessory pack, in conjunction with the microparticle packs, provides reagents sufficient for multiplexing up to ten analytes on a single 96 well plate. The Goat Anti-Mouse IgG Coated Microparticle Packs allow fast and efficient coupling of mouse antibodies to microparticle beads.

### Accessory Pack Contents

Microparticle Diluent  
Biotin Antibody Diluent 2  
Wash Buffer Concentrate  
Streptavidin-conjugated Phycoerythrin  
Filter-bottomed Microplate  
Plate Covers

\*Reagents sufficient for 1 plate

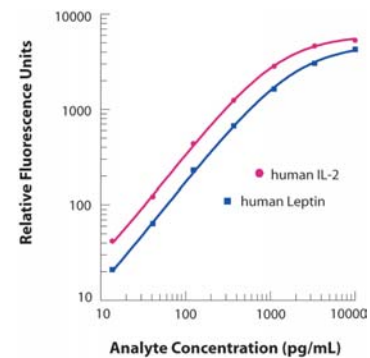
### Microparticle Pack Contents

Goat Anti-mouse IgG Coated Microparticles  
Coupling Vial

\*Reagents sufficient for 1 plate

### Additional equipment/reagents required

Luminex® 100™ Analyzer with X-Y Platform  
Mouse monoclonal antibodies for analytes of interest  
Biotin-labeled antibodies for analytes of interest  
Proteins or molecules of interest for construction of standard curve  
Buffer for the reconstitution and dilution of standards  
Microplate vacuum manifold



**Figure 1.** Standard curves were generated using R&D Systems' Human IL-2 (Catalog # MAB602 and BAF202) and Human Leptin (Catalog # MAB398 and BAM398) Matched Antibody Pairs in conjunction with the Fluorokine MAP Multiplex Reagents. Although this is typical data for an optimized assay, results may vary.

For more information, please visit [www.RnDSystems.com/FluorokineMAP](http://www.RnDSystems.com/FluorokineMAP)

# Wnt-5a

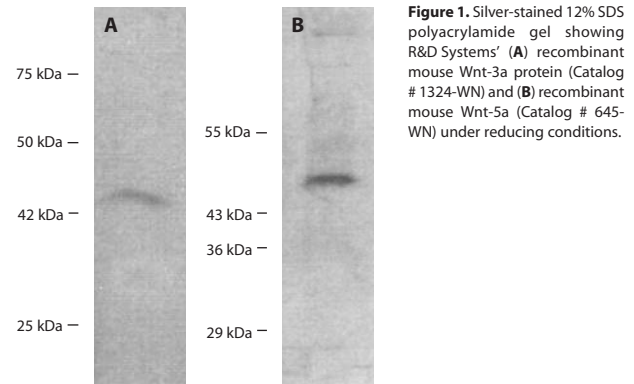
Wnt signaling regulates growth, proliferation, and differentiation of various cell types during development. Wnt proteins number approximately 20 and are typically divided into at least two distinct functional classes: the Wnt-1 or Wnt/ $\beta$ -Catenin class that is implicated in dorsal development, and the Wnt-5a or Wnt/ $Ca^{2+}$  class that plays roles in gastrulation movements and cell adhesion.<sup>1</sup>

First indications that Wnts have distinct functions came from a mammary epithelial cell line transformation study. Wnts were classified into three groups based on their effects on the growth of C57MG cells: highly transforming (Wnt-1, 3a, 7a), moderately transforming (Wnt-2, 5b, 7b) and non-transforming (Wnt-4, 5a, 6).<sup>2</sup> Further studies showed that transforming Wnts led to accumulation of  $\beta$ -Catenin, while the non-transforming Wnts did not.<sup>3</sup> In addition, antisense Wnt-5a mimics the phenotype mediated by Wnt-1 in C57MG mammary epithelial cells, and Wnt-1 transformation is partially blocked in the presence of Wnt-5a.<sup>4</sup> Taken together, this *in vitro* data points to an antagonistic relationship between Wnt/ $\beta$ -Catenin signaling and Wnt/ $Ca^{2+}$  signaling.

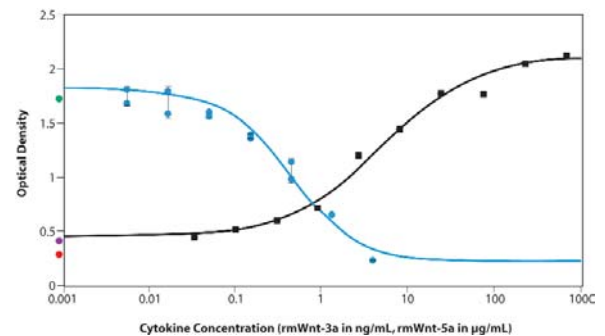
*In vivo*, the Wnt/ $\beta$ -Catenin class promotes duplication of the dorsal axis in *Xenopus* embryos, while the Wnt-5a class alters morphogenetic movements.<sup>5</sup> Intriguingly, the Wnt-5a class can antagonize the Wnt-1 class: Wnt-5a impairs the ability of Wnt-1 to induce a secondary axis in *Xenopus* embryos.<sup>5</sup> The precise mechanism responsible for this Wnt-Wnt antagonism is not well understood,<sup>1,6</sup> but is verified in other experimental systems. After removing both maternal and zygotic Wnt-5 in zebrafish, embryos show various degrees of dorsalized phenotypes, reminiscent of overactivation of Wnt/ $\beta$ -Catenin signaling.<sup>7</sup> These embryos also exhibit increased  $\beta$ -Catenin levels and activation of downstream genes.<sup>7</sup> In Wnt-5a knockout mice,  $\beta$ -Catenin accumulation in the limb bud suggests that Wnt-5a normally promotes degradation of  $\beta$ -Catenin.<sup>8</sup> This cross-talk between distinct Wnt signaling pathways may be another level of control for regulating growth and development during embryogenesis.

## References

1. Veeman, M.T. *et al.* (2003) *Dev. Cell* **5**:367.
2. Wong, G.T. *et al.* (1994) *Mol. Cell Biol.* **14**:6278.
3. Shimizu, H. *et al.* (1997) *Cell Growth Differ.* **8**:1349.
4. Olson, D.J. & D.M. Gibo (1998) *Exp. Cell Res.* **241**:134.
5. Torres, M.A. *et al.* (1996) *J. Cell Biol.* **133**:1123.
6. Weidinger, G. & R.T. Moon (2003) *J. Cell Biol.* **162**:753.
7. Westfall, T.A. *et al.* (2003) *J. Cell Biol.* **162**:889.
8. Topol, L. *et al.* (2003) *J. Cell Biol.* **162**:899.



**Figure 1.** Silver-stained 12% SDS polyacrylamide gel showing R&D Systems' (A) recombinant mouse Wnt-3a protein (Catalog # 1324-WN) and (B) recombinant mouse Wnt-5a (Catalog # 645-WN) under reducing conditions.



**Figure 2.** Wnt-3a and Wnt-5a have opposing effects on alkaline phosphatase (AP) expression in MC3T3E1 pre-osteoblasts. Wnt-3a enhances BMP-2 (5 ng/mL) induced differentiation in a dose dependent fashion (black); BMP-2 is added at 5 ng/mL and causes a minimal increase in AP on its own at this concentration (purple) as compared to untreated (red) cells. Wnt-5a diminishes the ability of Wnt-3a to induce AP expression in a dose dependent manner (blue); Wnt-3a added at 20 ng/mL and BMP-2 at 5 ng/mL (green) results in significant AP expression that is reduced with increasing amounts of Wnt-5a.

**Now Available**  
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