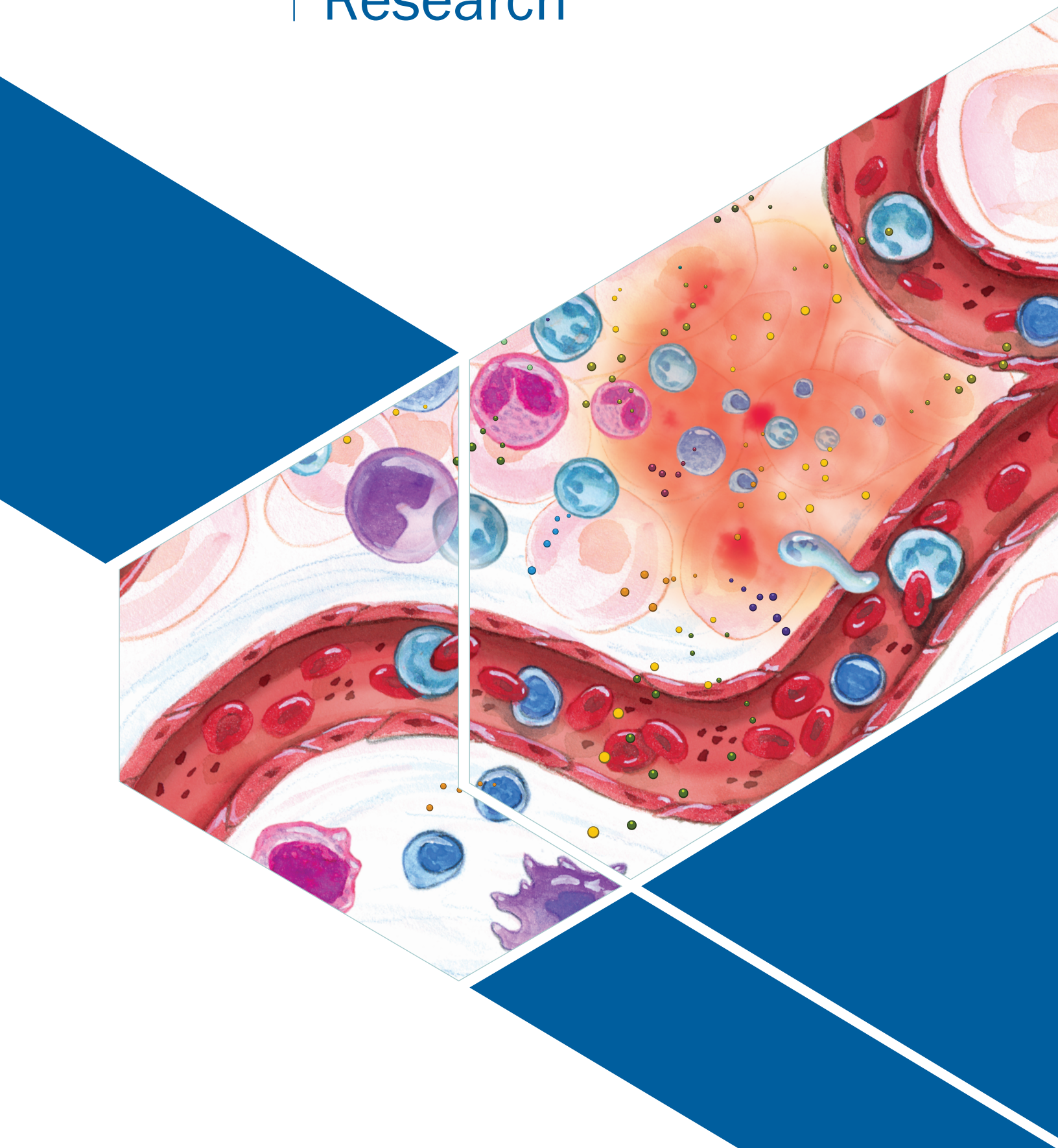
bio-techne®

Products for IL-1 Family Research



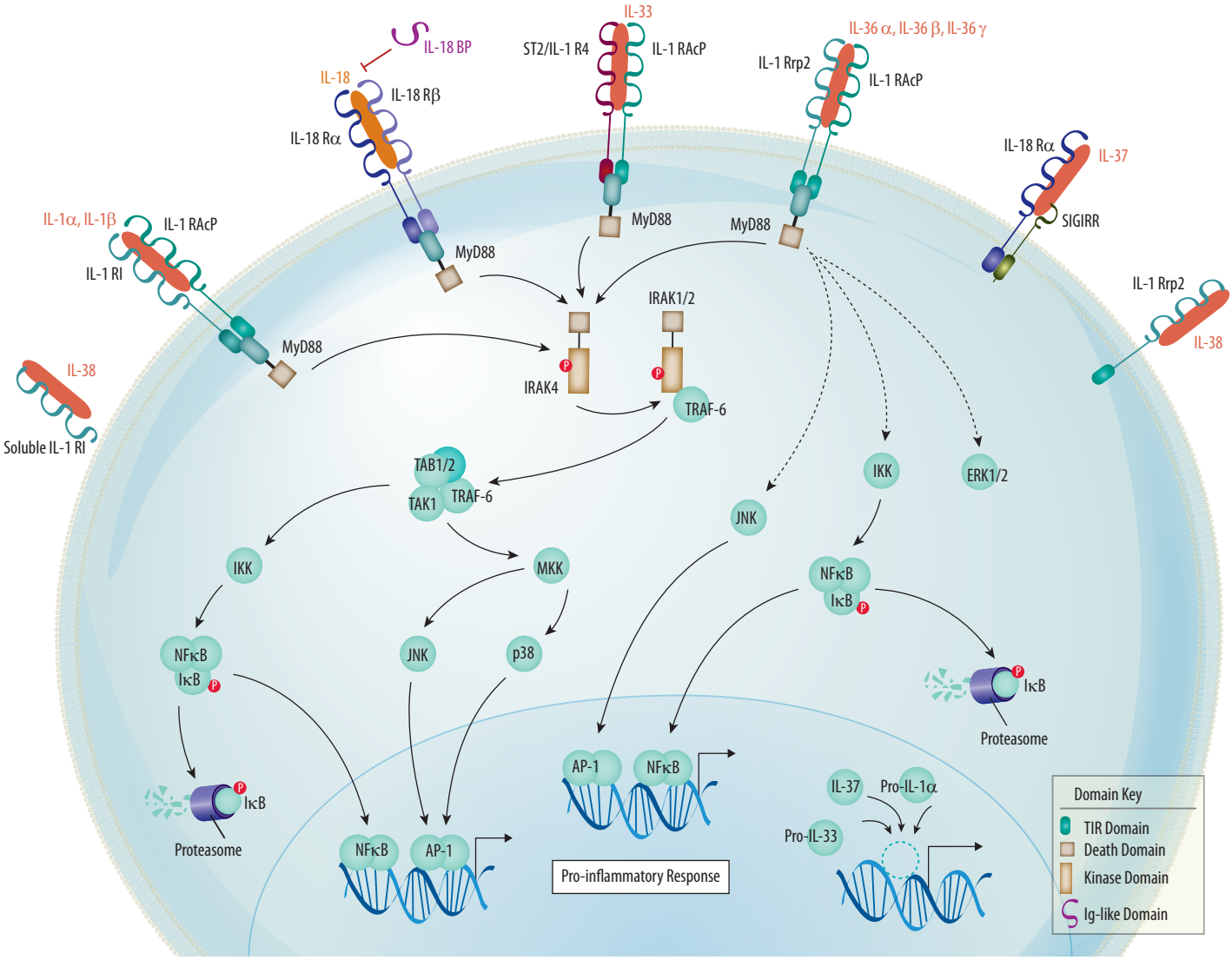
The IL-1 Cytokine Family

The IL-1 cytokine family consists of eleven members, including seven cytokines with pro-inflammatory activities (IL-1α, IL-1β, IL-18, IL-33, IL-36α, IL-36β, and IL-36γ), one with anti-inflammatory activity (IL-37), and three receptor antagonists (IL-1ra, IL-36Ra, and IL-38). Cytokines belonging to the IL-1 family share a conserved β-trefoil structure and bind to receptors belonging to the IL-1 receptor family (IL-1 R1-IL-1 R10). With the exception of IL-1ra/IL-1F3, IL-1 family cytokines lack a signal peptide and therefore are not thought to be secreted by the conventional endoplasmic reticulum/Golgi-dependent secretory pathway used by other cytokines. IL-1β and IL-18 are synthesized as inactive precursor proteins that are activated and secreted following cleavage by Caspase-1. N-terminal processing is also required for IL-36α, IL-36β, IL-36γ, and IL-36Ra to be fully active, but the processing enzymes involved have not been identified.

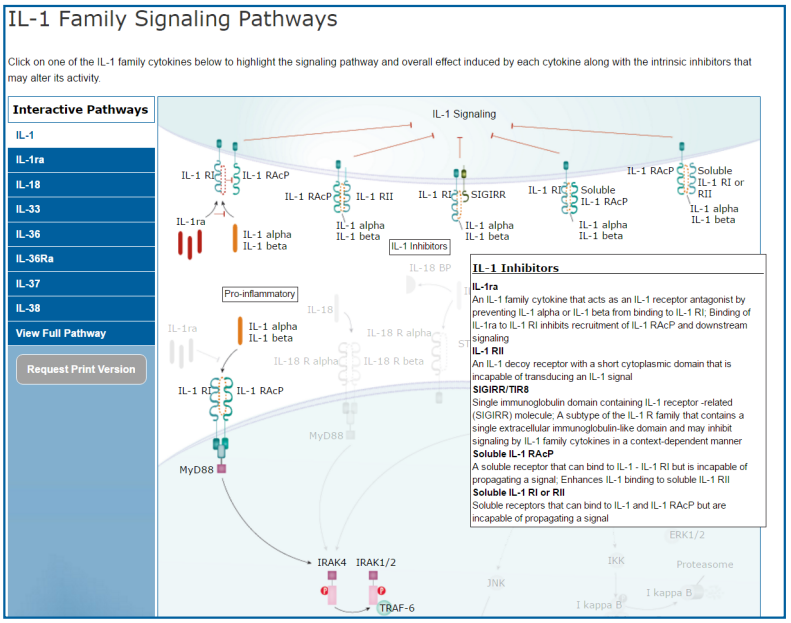
IL-1 family cytokines activate intracellular signaling pathways by binding to a primary receptor subunit, such as IL-1 RI/IL-1 R1, IL-18 Rα/IL-1 R5, IL-1 Rrp2/IL-1 R6, or ST2/IL-1 R4, which then recruits a co-receptor to form the active receptor complexes. Most IL-1 family receptors have three extracellular immunoglobulin-like domains and a cytoplasmic Toll/IL-1 receptor (TIR) domain, with the exceptions of SIGIRR/IL-1 R8, which has only one Ig-like domain and IL-1 RII/IL-1 R2, which lacks an intracellular TIR domain. The TIR domain is also conserved in Toll-like receptors (TLRs) and a number of intracellular adaptor proteins that mediate IL-1 R/TLR signaling. One additional structural difference among IL-1 family receptors is that SIGIRR/IL-1 R8, TIGIRR-1/IL-1 R9, and TIGIRR-2/IL-1 R10 contain an intracellular C-terminal extension that is not found in other receptors belonging to this family. Signaling cascades triggered by the seven pro-inflammatory IL-1 family cytokines activate MAPKs, AP-1, and NFκB, leading to the expression of pro-inflammatory cytokines, chemokines, and secondary mediators of the inflammatory response. In addition, many of these cytokines have been shown to regulate the differentiation and function of T helper cells. Other members of the IL-1 family inhibit inflammation by functioning as antagonists of IL-1 or IL-36 signaling. IL-1ra negatively regulates IL-1 signaling by binding to IL-1 RI/IL-1R1, which inhibits its ability to interact with IL-1α and IL-1β. Similarly, IL-36Ra binds to IL-1 Rrp2/IL-1 R6 and inhibits IL-36 signaling. Both the IL-1 and IL-36 receptor antagonists are incapable of initiating downstream signaling on their own due to an inability to recruit the IL-1 RAcP/IL-1 R3 co-receptor. Although less is currently known about IL-37 and IL-38, both are also thought to have anti-inflammatory effects. Five splice variants of IL-37 exist, with four containing a putative Caspase-1 cleavage site. Both the immature and the mature forms of the longest isoform, IL-37b, bind to IL-18 BP and enhance its ability to inhibit IL-18 activity. Additionally, IL-37 binds to a receptor complex consisting of IL-18 Rα/IL-1 R5 and SIGIRR/IL-1 R8 and has anti-inflammatory effects. Like the precursor forms of IL-1α and IL-33, the mature form of IL-37b can also translocate to the nucleus where it may act as a transcriptional regulator. IL-38 binds to the IL-36 receptor, IL-1 Rrp2/IL-1 R6, and soluble IL-1 RI/IL-1 R1. Initial data suggests that IL-38 has antagonistic effects similar to those induced by IL-36Ra. For additional information, please visit our website at rndsystems.com/IL-1Family.

IL-1 Family Cytokines				
Cytokine	**Alternate Name**	**Receptor**	**Co-receptor**	**Function**
IL-1α	IL-1F1	IL-1 RI/IL-1 R1 or IL-1 RII/IL-1 R2	IL-1 RAcP/IL-1 R3	Pro-inflammatory
IL-1β	IL-1F2	IL-1 RI/IL-1 R1 or IL-1 RII/IL-1 R2	IL-1 RAcP/IL-1 R3	Pro-inflammatory
IL-1ra	IL-1F3	IL-1 RI/IL-1 R1		Receptor antagonist; inhibits inflammation
IL-18	IL-1F4	IL-18 Rα/IL-1 R5	IL-18 Rβ/IL-1 R7	Pro-inflammatory
IL-33	IL-1F11	ST2/IL-1 R4	IL-1 RAcP/IL-1 R3	Pro-inflammatory
IL-36α	IL-1F6	IL-1 Rrp2/IL-1 R6	IL-1 RAcP/IL-1 R3	Pro-inflammatory
IL-36β	IL-1F8	IL-1 Rrp2/IL-1 R6	IL-1 RAcP/IL-1 R3	Pro-inflammatory
IL-36γ	IL-1F9	IL-1 Rrp2/IL-1 R6	IL-1 RAcP/IL-1 R3	Pro-inflammatory
IL-36 Ra	IL-1F5	IL-1 Rrp2/IL-1 R6		Receptor antagonist; inhibits inflammation
IL-37	IL-1F7	IL-18 Rα/IL-1 R5	SIGIRR/IL-1 R8	Anti-inflammatory
IL-38	IL-1F10	IL-1 Rrp2/IL-1 R6		Putative receptor antagonist; inhibits inflammation

IL-1 Receptor Family		
Receptor	**Alternate Name**	**Functions**
IL-1 RI	IL-1 R1	Primary cytokine-binding receptor for IL-1α and IL-1β; inhibited by IL-1ra binding
IL-1 RII	IL-1 R2	Decoy receptor; inhibits IL-1 signaling
IL-1 RAcP	IL-1 R3	Co-receptor for IL-1 RI, ST2/IL-1 R4, and IL-1 Rrp2/IL-1 R6
ST2/IL-33 R	IL-1 R4	Primary cytokine-binding receptor for IL-33
IL-18 Rα	IL-1 R5	Primary cytokine-binding receptor for IL-18
IL-1 Rrp2	IL-1 R6	Primary cytokine-binding receptor for IL-36α, IL-36β, and IL-36γ; inhibited by IL-36Ra binding
IL-18 Rβ	IL-1 R7	Co-receptor for IL-18 Rα/IL-1 R5 binding to IL-18
SIGIRR/TIR8	IL-1 R8	Co-receptor for IL-18Rα/IL-1 R5 binding to IL-37
TIGIRR-1	IL-1 R9	Orphan receptor
TIGIRR-2	IL-1 R10	Orphan receptor

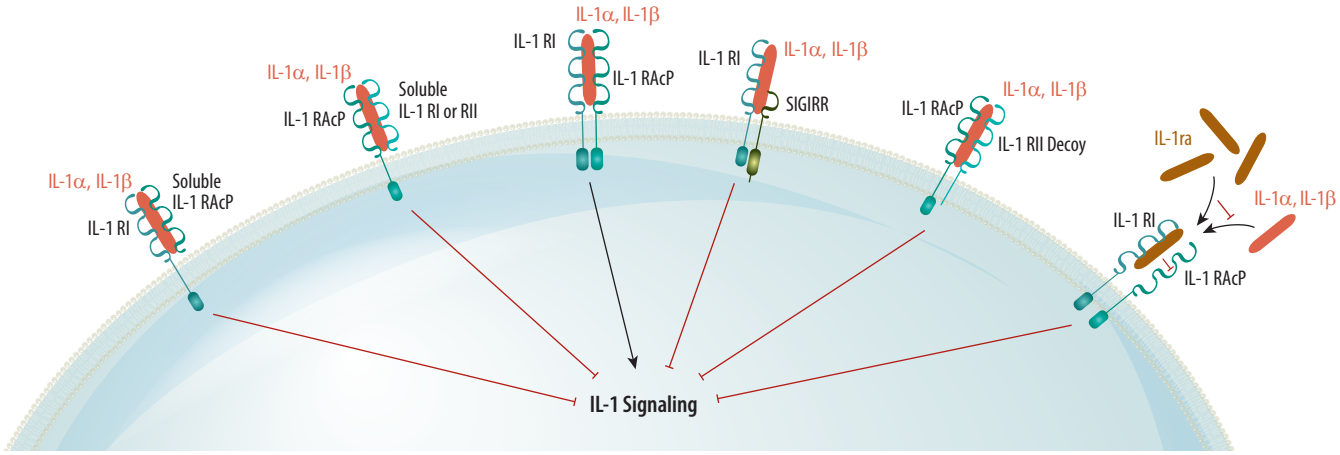


Interact with this pathway | rndsystems.com/pathways_IL-1FamilySignaling

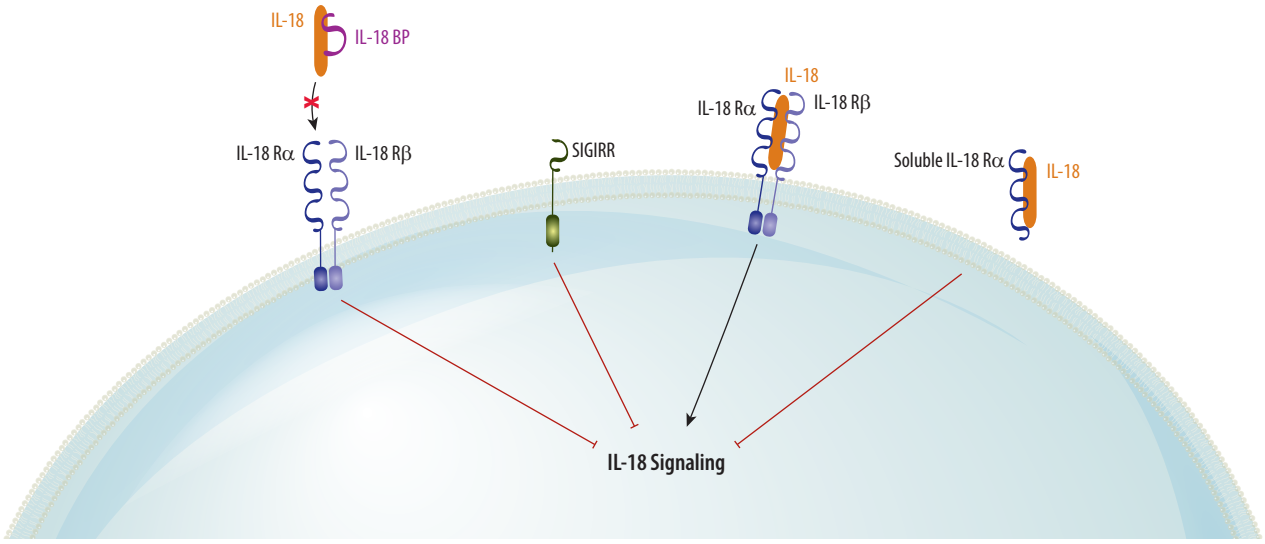


IL-1 Cytokine Family Inhibitors

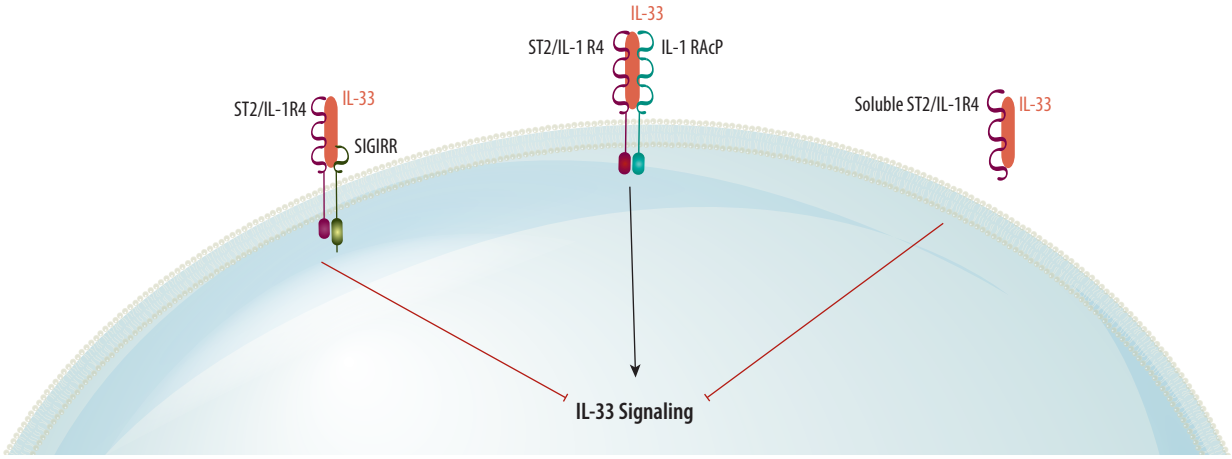
IL-1 Inhibitors	
IL-1ra	An IL-1 family cytokine that acts as an IL-1 receptor antagonist by competing with IL-1α and IL-1β for binding to IL-1 RI/IL-1 R1; binding of IL-1ra to IL-1 RI/IL-1 R1 inhibits recruitment of IL-1 RAcP and downstream signaling
IL-1 RII/IL-1 R2	An IL-1 decoy receptor with a short cytoplasmic domain that is incapable of transducing an IL-1 signal; binds to pro-IL-1α and pro-IL-1β in the cytosol, preventing their cleavage and activation by different enzymes
SIGIRR/TIR8	Single immunoglobulin domain-containing IL-1 receptor-related (SIGIRR) molecule; a subtype of the IL-1 receptor family that contains a single extracellular immunoglobulin-like domain and may inhibit signaling by IL-1 famly cytokines in a context-dependent manner by preventing association of the co-receptor or interfering with the association of TIR-containing adaptor proteins with the receptor complex; co-receptor for IL-37
Soluble IL-1 RI/IL-1 R1 or IL-1 RII/IL-1 R2	Soluble receptors that can bind to IL-1 and IL-1 RAcP/IL-1 R3 but are incapable of propagating a signal
Soluble IL-1 RAcP/IL-1 R3	A soluble receptor that can bind to IL-1 - IL-1 RI/IL-1 R1 but is incapable of propagating a signal; enhances IL-1 binding to soluble IL-1 RII/IL-1 R2



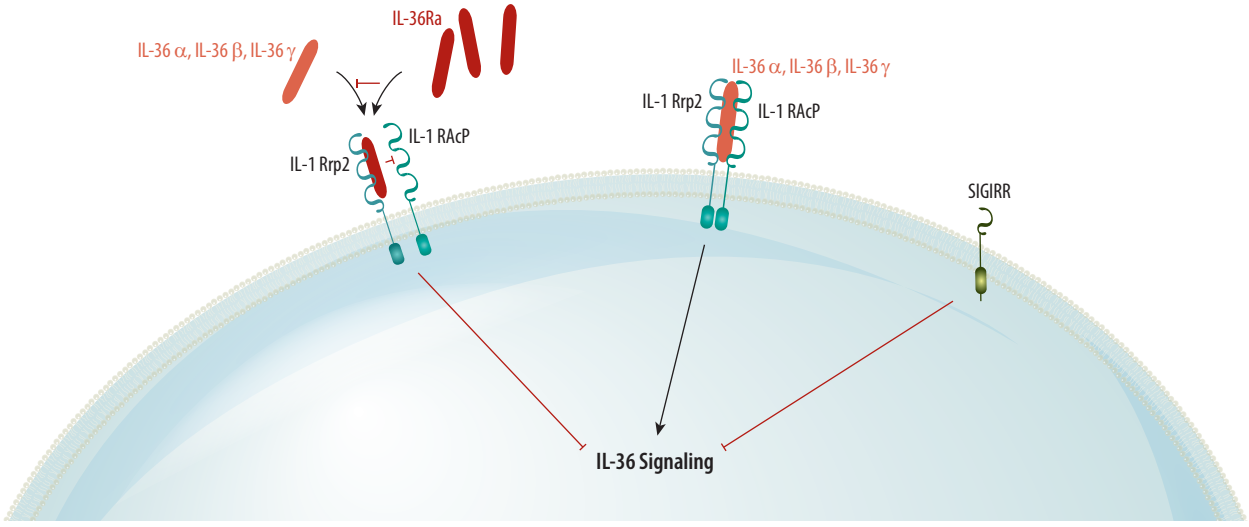
IL-18 Inhibitors	
IL-18 BP	IL-18 binding protein (IL-18 BP); a soluble protein that binds to IL-18 with higher affinity than either the cell-bound or soluble forms of IL-18 R and prevents IL-18 signaling
SIGIRR/TIR8	Single immunoglobulin domain-containing IL-1 receptor-related (SIGIRR) molecule; a subtype of the IL-1 receptor family that contains a single extracellular immunoglobulin-like domain and may inhibit signaling by IL-1 famly cytokines in a context-dependent manner by preventing association of the co-receptor or interfering with the association of TIR-containing adaptor proteins with the receptor complex; co-receptor for IL-37
Soluble IL-18 Rα	A soluble receptor that can bind to IL-18 but is incapable of propagating a signal; a weak inhibitor compared to IL-18 BP



IL-33 Inhibitors	
SIGIRR/TIR8	Single immunoglobulin domain-containing IL-1 receptor-related (SIGIRR) molecule; a subtype of the IL-1 receptor family that contains a single extracellular immunoglobulin-like domain and may inhibit signaling by IL-1 famly cytokines in a context-dependent manner by preventing association of the co-receptor or interfering with the association of TIR-containing adaptor proteins with the receptor complex; co-receptor for IL-37
Soluble ST2/IL-1 R4	A soluble receptor that can bind to IL-33 but is incapable of propagating a signal



IL-36 Inhibitors	
IL-36Ra	An IL-1 family cytokine that acts as an IL-36 receptor antagonist by preventing IL-36α, IL-36β, or IL-36γ from binding to IL-1 Rrp2/IL-1 R6; binding of IL-36ra to IL-1 Rrp2/IL-1 R6 inhibits recruitment of IL-1 RAcP/IL-1 R3 and downstream signaling
SIGIRR/TIR8	Single immunoglobulin domain-containing IL-1 receptor-related (SIGIRR) molecule; a subtype of the IL-1 receptor family that contains a single extracellular immunoglobulin-like domain and may inhibit signaling by IL-1 famly cytokines in a context-dependent manner by preventing association of the co-receptor or interfering with the association of TIR-containing adaptor proteins with the receptor complex; co-receptor for IL-37

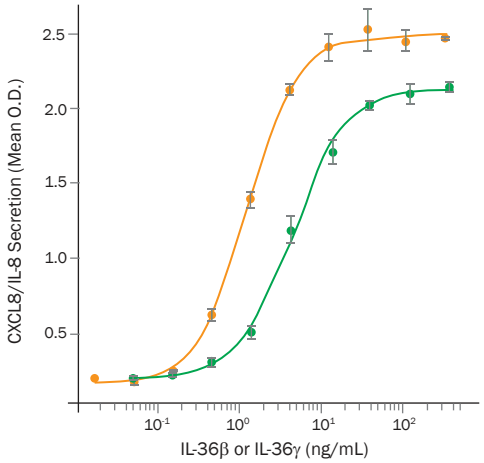


R&D Systems® Products for IL-1 Family Research

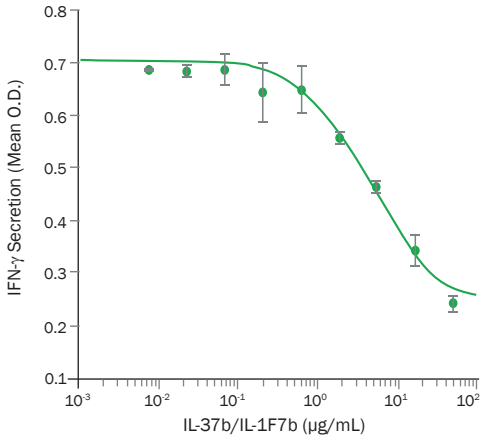
Recombinant Proteins

R&D Systems has an unparalleled selection of bioactive proteins for IL-1 family research. We offer recombinant human and mouse proteins for most of the IL-1 family cytokines and receptors including bioactive N-terminally truncated forms of Recombinant Human and Mouse IL-36α, IL-36β, and IL-36γ, and Recombinant Human IL-37b. In addition, we have just recently added Recombinant Human and Mouse IL-18 to our product portfolio. Stringent production and purification standards, along with our rigorous bioassay testing, ensure that R&D Systems® proteins will provide industry-leading bioactivity and lot-to-lot consistency.

R&D Systems Offers the Widest Selection of Pro- and Anti-Inflammatory IL-1 Family Cytokines



IL-36β and IL-36γ Induce IL-8 Secretion by A431 Cells. The A431 human epithelial carcinoma cell line was treated with increasing concentrations of Recombinant Human IL-36β/IL-1F8 (aa 5–157; Catalog # 6834-ILB; orange line) or Recombinant Human IL-36γ/IL-1F9 (aa 18–169; Catalog # 6835-IL; green line). The levels of CXCL8/IL-8 in the cell culture supernatants were measured using the Human CXCL8/IL-8 DuoSet® ELISA Development System (Catalog # DY208). The ED_{50} for this effect is 0.8–4.8 ng/mL following treatment with Recombinant Human IL-36β/IL-1F8 and 1.5–9 ng/mL following treatment with Recombinant Human IL-36γ/IL-1F9.

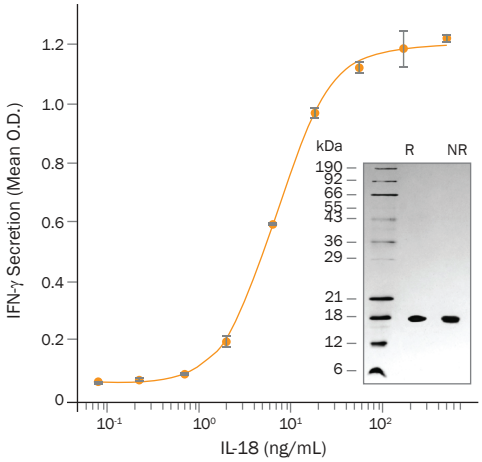


IL-37b Enhances the Inhibition of IL-18-induced IFN-γ Release by IL-18 Binding Protein. The KG-1 human acute myelogenous leukemia cell line was treated with 40 ng/mL Recombinant Human IL-18 (Catalog # 9124-IL), 5 ng/mL Recombinant Human IL-18 BPa (Catalog # 119-BP), and increasing concentrations of Recombinant Human IL-37b/IL-1F7b (Catalog # 7585-IL). The levels of IFN-γ in cell culture supernatants were measured using the Human IFN-γ Quantikine® ELISA Kit (Catalog # DIF50). The ED_{50} for this effect is 2.5–12.5 µg/mL.

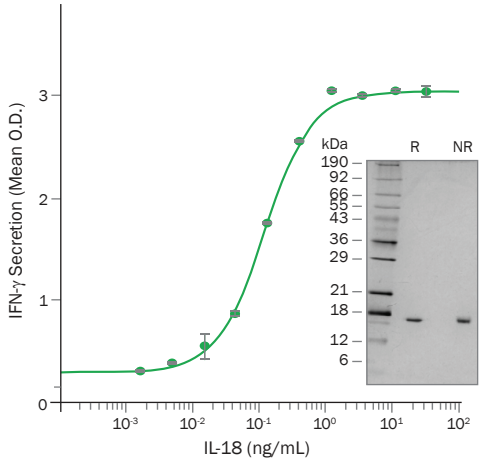
New! Recombinant Human and Mouse IL-18

Benefits Include:

- High Activity Levels that are Equivalent to the Leading Competitor's Proteins
- Increased Stability Compared to the Leading Competitor
- Superior Purity



Recombinant Human IL-18 Induces IFN-γ Production by KG-1 Cells. The KG-1 human acute myelogenous leukemia cell line was treated with increasing concentrations of Recombinant Human IL-18/IL-1F4 (Catalog # 9124-IL) and the levels of IFN-γ in cell culture supernatants were assessed using the Human IFN-γ Quantikine® ELISA Kit (Catalog # DIF50). The ED_{50} for this effect is 1.5–9 ng/mL. The purity of Recombinant Human IL-18/IL-1F4 (Catalog # 9124-IL) was assessed by SDS-PAGE analysis under reducing (R) and non-reducing (NR) conditions and visualized by silver staining.



Recombinant Mouse IL-18 Induces IFN-γ Production by Activated T Cells. Activated mouse T cells were treated with increasing concentrations of Recombinant Mouse IL-18/IL-1F4 (Catalog # 9139-IL) and the levels of IFN-γ in cell culture supernatants were measured using the Mouse IFN-γ Quantikine® ELISA Kit (Catalog # MIF50). The ED_{50} for this effect is 0.06–0.36 ng/mL. The purity of Recombinant Mouse IL-18/IL-1F4 (Catalog # 9139-IL) was assessed by SDS-PAGE analysis under reducing (R) and non-reducing (NR) conditions and visualized by silver staining.

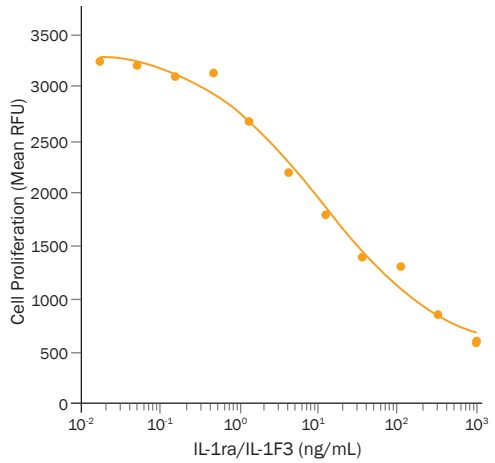
Recombinant Proteins

IL-1 Family Cytokines		
Molecule	**Species**	**Catalog #**
IL-1α/IL-1F1	Human	200-LA
	Mouse	400-ML
	Rat	500-RL
IL-1β/IL-1F2	Human	201-LB
	Mouse	401-ML
	Rat	501-RL
IL-1ra/IL-1F3	Human	280-RA
	Mouse	480-RM
	Rat	1545-RA
IL-18/IL-1F4	Human	9124-IL *New!*
		B001-5
		B003-5
	Mouse	9139-IL *New!*
		B004-5
	Rat	521-RL
IL-33/IL-1F11	Human	3625-IL
	Mouse	3626-ML
IL-36α/IL–1F6 (aa 1-158)	Human	1078-IL
IL-36α/IL–1F6 (aa 6-158)	Human	6995-IL
IL-36α/IL–1F6 (aa 1-160)	Mouse	2297-ML
IL-36α/IL–1F6 (aa 8-160)	Mouse	7059-ML
IL-36β/IL-1F8 (aa 1-157)	Human	1099-IL
IL-36β/IL-1F8 (aa 5-157)	Human	6834-ILB
IL-36β/IL-1F8 (aa 1-183)	Mouse	2298-ML
IL-36β/IL-1F8 (aa 31-183)	Mouse	7060-ML
IL-36γ/IL-1F9 (aa 1-169)	Human	2320-IL
IL-36γ/IL-1F9 (aa 18-169)	Human	6835-IL
IL-36γ/IL-1F9 (aa 13-164)	Mouse	6996-IL
IL-36Ra/IL-1F5	Human	1275-IL
	Mouse	2714-ML
IL-37/IL-1F7	Human	1975-IL
IL-37b/IL-1F7b	Human	7585-IL

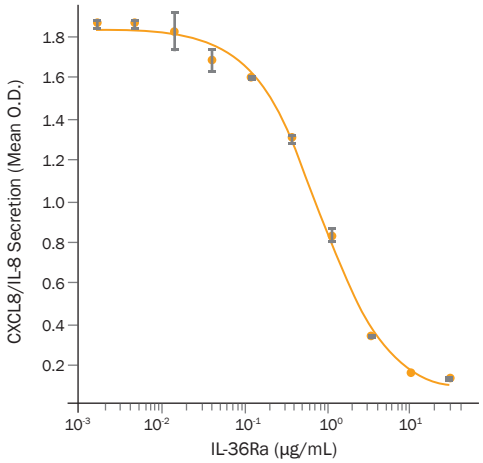
IL-1 Family Receptors		
Molecule	**Species**	**Catalog #**
IL-1 RI/IL-1 R1	Human	269-1R
	Mouse	771-MR
	Rat	4895-MR
IL-1 RII/IL-1 R2	Human	263-2R
		663-2R
	Mouse	563-MR
IL-1 RAcP/IL-1 R3	Human	676-CP
		9176-CP *New!*
IL-1 RAPL2/IL-1 R9	Human	1007-MR
IL-1 Rrp2/IL-1 R6	Human	872-RP
	Mouse	2354-RP
	Rat	573-RP
IL-18 Rα/IL-1 R5	Human	816-LR
IL-18 Rβ/IL-1 R7	Human	118-AP
SIGIRR	Human	990-SG
	Mouse	992-SG
ST2/IL-33 R	Human	523-ST
	Mouse	1004-MR

Recombinant proteins for additional species are also available for most molecules. Please visit our website at rndsystems.com/IL-1Family for a complete product listing.

R&D Systems Also Offers IL-1 Family Receptor Antagonists



Recombinant Human IL-1ra Inhibits IL-1α-induced Cell Proliferation. The D10.G4.1 mouse helper T cell line was treated with 50 pg/ml Recombinant Human IL-1α/IL-1F1 (Catalog # 200-LA) and increasing concentrations of Recombinant Human IL-1ra/IL-1F3 (Catalog # 280-RA) and cell proliferation was assessed. The ED_{50} for this effect is 5–40 ng/mL.

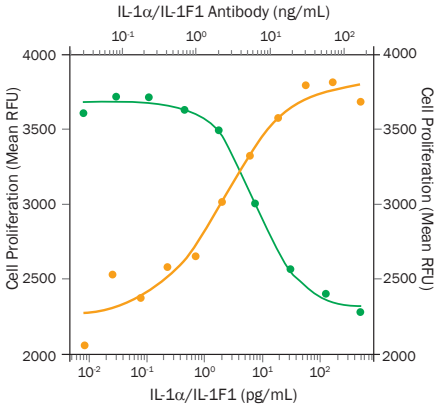


Recombinant Human IL-36Ra Inhibits IL-36β-induced IL-8 Secretion. The A431 human epithelial carcinoma cell line was treated with 10 ng/mL Recombinant Human IL-36β (Catalog # 6834-ILB) and increasing concentrations of Recombinant Human IL-36Ra/IL-1F5 (Catalog # 1275-IL). The levels of CXCL8/IL-8 in the cell culture supernatants were measured using the Human CXCL8/IL-8 DuoSet® ELISA Development System (Catalog # DY208). The ED_{50} for this effect is 0.2–1 µg/mL.

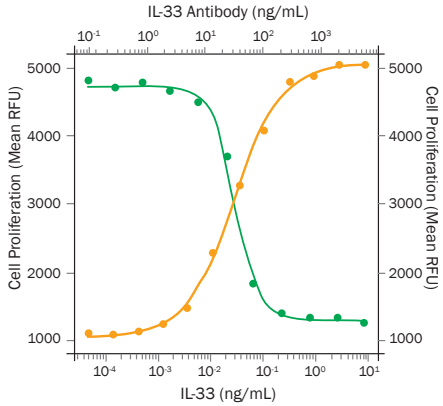
Unlabeled and Fluorochrome-conjugated Antibodies for IL-1 Family Cytokines and Receptors

R&D Systems offers both unconjugated and fluorochrome-conjugated antibodies for studying IL-1 family cytokines and their receptors. These antibodies are qualified for blocking/neutralization, flow cytometry, immunocytochemistry/immunohistochemistry, and/or Western blot. All of our antibodies are 100% guaranteed to work in the application and species listed on the R&D Systems website.

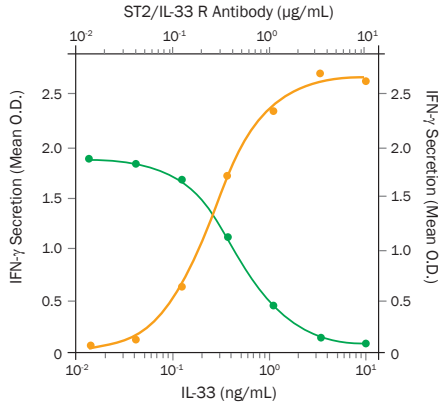
Antibodies for Blocking/Neutralization



IL-1α-induced Cell Proliferation and Neutralization using an Anti-Human IL-1α Antibody. Proliferation of the D10.G4.1 mouse helper T cell line was assessed following treatment with increasing concentrations of Recombinant Human IL-1α/IL-1F1 (Catalog # 200-LA; orange line). Proliferation stimulated by 50 pg/mL Recombinant Human IL-1α/IL-1F1 was neutralized by treating the cells with increasing concentrations of a Goat Anti-Human IL-1α/IL-1F1 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF-200-NA; green line). The ND_{50} for this effect is typically 4–20 ng/mL in the presence of 1.25 µg/mL concanavalin A.

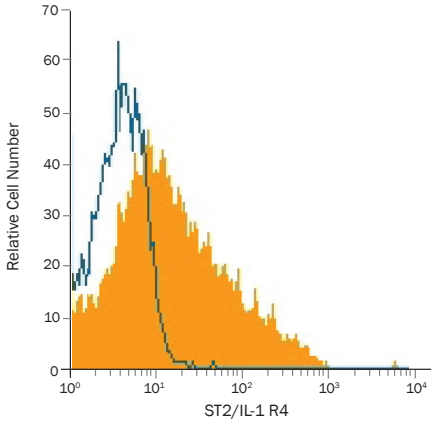


IL-33-induced Cell Proliferation and Neutralization using an Anti-Human IL-33 Antibody. Proliferation of the D10.G4.1 mouse helper T cell line was assessed following treatment with increasing concentrations of Recombinant Mouse IL-33 (Catalog # 3626-ML; orange line). Proliferation stimulated by 0.25 ng/mL Recombinant Mouse IL-33 was neutralized by treating the cells with increasing concentrations of a Goat Anti-Mouse IL-33 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF3626; green line). The ND_{50} for this effect is typically 10–50 ng/mL.

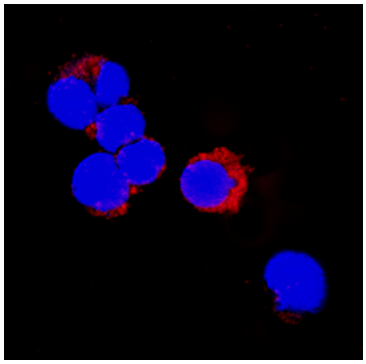


IL-33-induced IFN-γ Secretion and Neutralization using an Anti-Human ST2/IL-33R Antibody. Human peripheral blood mononuclear cells were treated with 0.25 ng/mL Recombinant Human IL-12 (Catalog # 219-IL) and increasing concentrations of Recombinant Human IL-33 (Catalog # 3625-IL). IFN-γ secretion was measured using the Human IFN-γ Quantikine® ELISA Kit (Catalog # DIF50; orange line). IFN-γ secretion induced by 1 ng/mL Recombinant Human IL-33 was neutralized by treating the cells with increasing concentrations of a Goat Anti-Human ST2/IL-33 R Antigen Affinity-purified Polyclonal Antibody (Catalog # AF523; green line). The ND_{50} for this effect is typically 0.1–0.6 µg/mL.

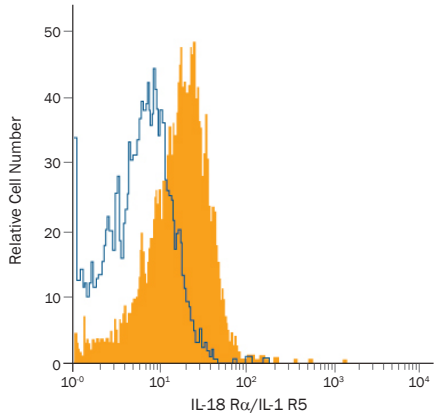
Antibodies for Immunocytochemistry or Flow Cytometry



Detection of ST2/IL-1 R4 in KG-1 Cells. The KG-1 human acute myelogenous leukemia cell line was stained with an APC-conjugated Goat Anti-Human ST2/IL-1 R4 Antigen Affinity-purified Polyclonal Antibody (Catalog # FAB5231A; filled histogram) or an APC-conjugated Goat IgG Isotype Control (Catalog # IC108A; open histogram).



Detection of IL-1β/IL-1F2 in MCF-7 Cells. IL-1β/IL-1F2 was detected in the immersion-fixed MCF-7 human breast cancer cell line using a Goat Anti-Mouse IL-1β/IL-1F2 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF-401-NA) at 8 µg/mL for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Goat IgG Secondary Antibody (Catalog # NL001; red) and counterstained with DAPI (blue). Specific staining was localized to the cytoplasm.



Detection of IL-18 Rα/IL-1 R5 in Human Peripheral Blood Mononuclear Cells by Flow Cytometry. Human peripheral blood mononuclear cells were treated with 5 µg/mL PHA and 10 ng/mL Recombinant Human IL-2 (Catalog # 202-IL) for 2 days and then stained with an APC-conjugated Mouse Anti-Human IL-18 Rα/IL-1 R5 Monoclonal Antibody (Catalog # FAB840A; filled histogram) or an APC-conjugated Mouse IgG_1 Isotype Control Antibody (Catalog # IC002A; open histogram).

Select R&D Systems® Antibodies for Studying IL-1 Family Cytokines & Their Receptors

IL-1 Family Cytokines				
Molecule	**Species**	**Clone**	**Unlabeled Antibodies Catalog # (Applications)**	**Fluorochrome-conjugated Antibodies Catalog # (Applications)**
IL-1α/IL-1F1	Human	4414	MAB200 (B/N, E, ICC/IF, WB)	IC200F
	Human	4414R	MAB200R (B/N, E, ICC/IF) *	
	Human	Polyclonal	AF-200-NA (B/N, ICC/IF, WB)	
	Mouse	40508	MAB400 (B/N, E)	
	Mouse	ALF161	MAB4001 (B/N, IP, WB)	
	Mouse	Polyclonal	AF-400-NA (B/N, IHC, WB)	
	Rat	59015	MAB500 (E, WB)	
	Rat	Polyclonal	AF500 (B/N, WB)	
IL-1α/IL-1F1 Membrane Form	Human	3405	MAB2001 (B/N, FC)	FAB200F, P (FC)
IL-1α/IL-1F1 Propeptide	Human	409405	MAB4154 (WB)	
	Human	Polyclonal	AF4154 (FC, WB)	
IL-1β/IL-1F2	Human	1027B		IC8406A, P (FC)
	Human	8516	MAB201 (B/N, FC, ICC/IF, WB)	IC201A, C, F, P (FC)
	Human	2805	MAB601 (B/N, E, ICC/IF, WB)	
	Human	Polyclonal	AF-201-NA (B/N, ICC/IF, WB)	
	Mouse	B122	MAB4012 (B/N, IP, WB)	
	Mouse	166931	MAB4013 (FC)	IC4013A, C, F, P (FC)
	Mouse	30311	MAB401 (B/N, E)	
	Mouse	30311R	MAB401R (B/N, ICC/IF) * *New!*	
	Mouse	Polyclonal	AF-401-NA (B/N, ICC/IF, IHC, SW, WB)	
	Rat	38123	MAB5011 (WB)	
	Rat	38139	MAB501 (B/N, ICC/IF)	
	Rat	Polyclonal	AF-501-NA (B/N, E, ICC/IF, WB)	
IL-1β/IL-1 F2 Propeptide	Human	615417	MAB6964 (ICC/IF, SW, WB)	
IL-1ra/IL-1F3	Human	10309	MAB280 (B/N, E)	IC280A (FC)
	Human	Polyclonal	AF-280-NA (B/N, IHC, WB)	
	Mouse	694204	MAB4801 (WB)	
	Mouse	Polyclonal	AF-480-NA (B/N, E, WB)	
IL-18/IL-1F4	Human	1072F	MAB9124 (B/N) * *New!*	
	Human	914205	MAB91241 (B/N) *New!*	
	Human	Polyclonal	AF2548 (B/N, ICC/IF, WB)	
	Human	125-2H	D044-3 (B/N, E, IP)	
	Human	25-2G	D043-3 (WB)	
	Mouse	93-10C	D048-3 (B/N, IP)	
	Mouse	39-3F	D046-3 (WB)	
	Mouse	74	D047-3 (E, IP)	
	Rat	69604	MAB521 (WB)	
	Rat	Polyclonal	AF521 (B/N, WB)	
IL-18/IL-1F4 Propeptide	Human	74801	MAB646 (FC, WB)	IC646P (FC)
	Human	Polyclonal	AF646 (WB)	
IL-33/IL-1F11	Human	1061A	MAB36252 (IHC) *	
	Human	40015C	MAB36253 (E, IHC, WB) * *New!*	
	Human	40115D	MAB36254 (B/N, IHC, WB) * *New!*	
	Human	390412	MAB3625 (ICC/IF, WB)	IC3625A, P (FC)
	Human	Polyclonal	AF3625 (B/N, E, ICC/IF, IHC, WB)	
	Mouse	396118	MAB3626 (FC, ICC/IF, WB)	IC3626P (FC)
	Mouse	Polyclonal	AF3626 (B/N, E, FC, ICC/IF, IHC, WB)	

* Indicates a recombinant monoclonal antibody

Application key: **B/N** Blocking/Neutralization **E** ELISA **FC** Flow Cytometry **ICC/IF** Immunocytochemistry/Immunofluorescence **IHC** Immunohistochemistry **IP** Immunoprecipitation **SW** Simple Western **WB** Western blot

Fluorocrome key for FAB/IC catalog numbers ending in: **A** Allophycocyanin **C** PerCP **F** Fluorescein **G** AlexaFluor® 488 **N** AlexaFluor® 700 **P** Phycoerythrin

Select R&D Systems® Antibodies for Studying IL-1 Family Cytokines & Their Receptors

IL-1 Family Cytokines				
Molecule	**Species**	**Clone**	**Unlabeled Antibodies Catalog # (Applications)**	**Fluorochrome-conjugated Antibodies Catalog # (Applications)**
IL-33/IL-1F11 Propeptide	Human	Polyclonal	AF4810 (ICC/IF, WB)	
	Mouse	518017	MAB5010 (WB)	
	Mouse	Polyclonal	AF5010 (ICC/IF, WB)	
IL-36α/IL–1F6	Human	162122	MAB1078 (WB)	
	Human	Polyclonal	AF1078 (IHC, WB)	
	Mouse	275339	MAB2297 (B/N, WB)	
	Mouse	Polyclonal	AF2297 (B/N, WB)	
IL-36β/IL-1F8	Human	162601	MAB1099 (WB)	
	Human	Polyclonal	AF1099 (B/N, IHC, WB)	
	Mouse	Polyclonal	AF2298 (B/N, WB)	
IL-36γ/IL-1F9	Human	278706	MAB2320 (B/N, WB)	
	Human	Polyclonal	AF2320 (B/N, WB)	
IL-36Ra/IL-1F5	Human	190524	MAB1275 (WB)	
	Human	Polyclonal	AF1275 (B/N, WB)	
	Mouse	759207	MAB2714 (WB)	
IL-37/IL-1F7	Human	899826	MAB19751 (FC)	IC19751G (FC)
	Human	261506	MAB1975 (B/N)	
	Human	Polyclonal	AF1975 (WB)	
IL-38/IL-1F10	Human	316709	MAB2427 (WB)	
	Human	Polyclonal	AF2427 (WB)	
	Mouse	798036	MAB7774 (FC, WB)	IC7774G (FC)
	Mouse	798036R	MAB7774R (FC, WB) *	

* Indicates a recombinant monoclonal antibody

Application key: **B/N** Blocking/Neutralization **E** ELISA **FC** Flow Cytometry **ICC/IF** Immunocytochemistry/Immunofluorescence **IHC** Immunohistochemistry **IP** Immunoprecipitation **SW** Simple Western **WB** Western blot

Fluorocrome key for FAB/IC catalog numbers ending in: **A** Allophycocyanin **C** PerCP **F** Fluorescein **G** AlexaFluor® 488 **N** AlexaFluor® 700 **P** Phycoerythrin

IL-1 Family Receptors				
Molecule	**Species**	**Clone**	**Unlabeled Antibodies Catalog # (Applications)**	**Fluorochrome-conjugated Antibodies Catalog # (Applications)**
IL-1 RI/IL-1 R1	Human	35730	MAB269 (E, WB)	
	Human	732229	MAB2692 (FC) *	
	Human	Polyclonal	AF269 (B/N, FC, WB)	FAB269A, F, N, P (FC)
	Mouse	JAMA147	MAB7711 (B/N)	
	Mouse	129304	MAB7712 (FC, WB)	FAAB7712F, P (FC)
	Mouse	Polyclonal	AF771 (B/N, IHC, WB)	
IL-1 RII/IL-1 R2	Human	32437	MAB263 (B/N, ICC/IF, WB)	
	Human	34141	MAB663 (B/N, E, WB)	FAB663A, C, F, N, P (FC)
	Human	Polyclonal	AF-263-NA (B/N, ICC/IF, WB)	
	Mouse	130817	MAB563 (WB)	
	Mouse	Polyclonal	AF563 (FC, IHC, WB)	FAB563G (FC)
IL-1 RAcP/IL-1 R3	Human	89412	MAB676 (FC)	FAB676A, C, G, N, P (FC)
	Human	89412R	MAB676R (FC) *	
	Human	Polyclonal	AF676 (FC, WB)	
IL-1 RAPL2/IL-1 R9	Human	Polyclonal	AF1007 (FC, IHC, WB)	
	Mouse	320017	MAB3068 (WB)	
IL-1 Rrp2/IL-1 R6	Human	Polyclonal	AF872 (WB)	
	Mouse	Polyclonal	AF2354 (WB)	
	Rat	131011	MAB573 (WB)	
	Rat	Polyclonal	AF573 (WB)	
IL-18 Rα/IL-1 R5	Human	70614	MAB8401 (WB)	
	Human	70625	MAB840 (B/N, FC, ICC/IF, IHC)	FAB840A, C, G, P (FC)
	Human	Polyclonal	AF840 (B/N, FC, IHC, WB)	
	Mouse	112614	MAB1216 (FC, WB)	FAB1216A, F, N (FC)
	Mouse	112624	MAB12161 (B/N, WB)	
	Mouse	Polyclonal	AF856 (B/N, FC, WB)	
IL-18 Rβ/IL-1 R7	Human	132016	MAB1181 (B/N, WB)	
	Human	132029	MAB118 (FC, WB)	FAB118F, P (FC)
	Human	Polyclonal	AF118 (B/N, WB)	
	Mouse	Polyclonal	AF199 (WB)	
SIGIRR/TIR8/IL-1 R8	Human	162201	MAB990 (WB)	FAB990A (FC)
	Human	Polyclonal	AF990 (WB)	
	Mouse	161917	MAB1092 (WB)	
	Mouse	Polyclonal	AF1092 (WB)	
ST2/IL-33 R	Human	97203	MAB523 (B/N, E, WB)	
	Human	Polyclonal	AF523 (B/N, FC, WB)	FAB5231A, P (FC)
	Mouse	245707	MAB10041 (B/N, E, FC)	FAB10041A, N, P (FC)
	Mouse	245714	MAB1004 (WB)	
	Mouse	Polyclonal	AF1004 (B/N, WB)	

* Indicates a recombinant monoclonal antibody

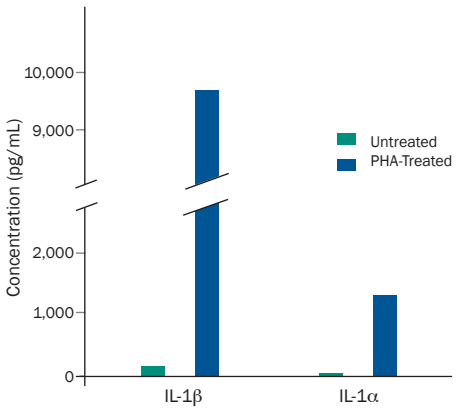
Application key: **B/N** Blocking/Neutralization **E** ELISA **FC** Flow Cytometry **ICC/IF** Immunocytochemistry/Immunofluorescence **IHC** Immunohistochemistry **IP** Immunoprecipitation **SW** Simple Western **WB** Western blot

Fluorocrome key for FAB/IC catalog numbers ending in: **A** Allophycocyanin **C** PerCP **F** Fluorescein **G** AlexaFluor® 488 **N** AlexaFluor® 700 **P** Phycoerythrin

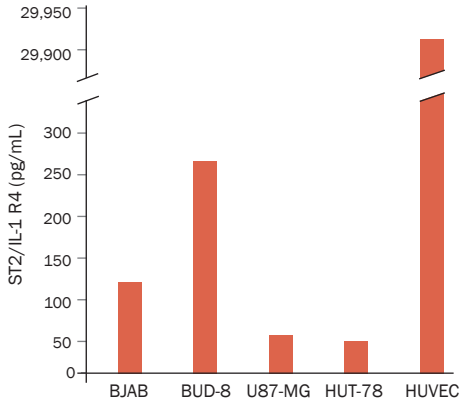
Antibodies for additional species are available for most target analytes. Please visit our website at rndsystems.com/IL-1Family for a complete product listing.

ELISA Kits for Detecting IL-1 Family Cytokines and Soluble IL-1 Family Receptors

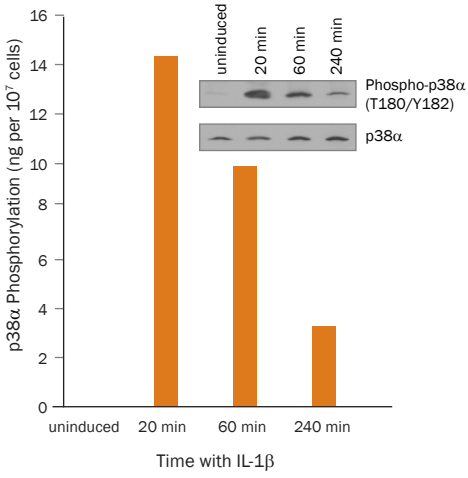
R&D Systems develops and manufactures the most highly referenced ELISA kits in the world. We offer both complete, ready-to-run Quantikine® Colorimetric Sandwich ELISA Kits and the more flexible DuoSet® ELISA Development Systems for detecting IL-1 family cytokines or soluble IL-1 family receptors. Quantikine® Kits are rigorously tested in-house to ensure that they provide the highest levels of specificity, accuracy, precision, and sensitivity in analyte quantification without the need for further assay optimization. DuoSet® ELISA Development Systems offer an economical alternative to Quantikine® Kits by providing all of the components necessary for a customer to develop their own working assay. In addition, we also offer DuoSet® IC ELISA Development Systems for quantifying specific intracellular proteins that are activated downstream of IL-1 family cytokines (refer to the product tables on pages 15–18 of this brochure).



Measurement of IL-1α and IL-1β in Peripheral Blood Mononuclear Cell Culture Supernatants. Human peripheral blood mononuclear cells were treated with PHA. The levels of IL-1α/IL-1F1 and IL-1β/IL-1F2 were assessed using the Human IL-1α/IL-1F1 Quantikine® ELISA Kit (Catalog # DLA50) or the Human IL-1β/IL-1F2 QuantiGlo® ELISA Kit (Catalog # QLB00B).



Measurement of ST2/IL-1 R4 Levels in Cell Culture Supernatants using the Human ST2/IL-33 R Quantikine® ELISA Kit. Aliquots of cell culture supernatants removed from the BJAB human Burkitt's lymphoma cell line, BUD-8 human skin fibroblast cell line, U87-MG glioblastoma/astrocytoma cell line, HUT-78 human mature cutaneous T cell lymphoma cell line, and human umbilical vein endothelial cells (HUVEC) were assayed for ST2/IL-1 R4 using the Human ST2/IL-33 R Quantikine® ELISA Kit (Catalog # DST200).



Detection of IL-1β-induced p38α Phosphorylation in HepG2 Cells. The HepG2 human hepatocellular carcinoma cell line was treated with Recombinant Human IL-1β/IL-1F2 (Catalog # 201-LB) for the indicated times. p38α phosphorylation was assessed in cell lysates using the Human/Mouse/Rat Phospho-p38α (T180/Y182) DuoSet® IC ELISA Development System (Catalog # DYC869B; bar graph). The results obtained from the DuoSet® IC ELISA are consistent with the relative levels of phosphorylated p38 detected in the same lysates by Western blot (inset).

IL-1 Family Cytokines			
Molecule	**Species**	**Quantikine® ELISA Kit (Catalog #)**	**DuoSet® ELISA Development System or Other ELISA Kit (Catalog #)**
IL-1α/IL-1F1	Human	DLA50	DY200
	Mouse	MLA00	DY400
	Rat	RRA00	
IL-1β/IL-1F2	Human	DLB50*	DY201
	Mouse	MLB00C	DY401
	Rat	RLB00	DY501
Pro-IL-1β/IL-1F2	Human	DLBP00	
IL-1ra/IL-1F3	Human	DRA00B	DY280
	Mouse	MRA00	DY480
IL-18/IL-1F4	Human		DY318 *New!* or 7620
	Mouse		7625
IL-18/IL-18 BPa Complex	Human		DY8936
IL-33/IL-1F11	Human	D3300	DY3625
	Mouse/Rat	M3300	DY3626
IL-36β/IL-1F8	Human		DY1099 *New!*
IL-36Ra/IL-1F5	Human		DY1275
IL-37/IL-1F7	Human		DY1975
IL-38/IL-1F10	Human		DY9110 *New!*
	Mouse		DY2427
*Quantikine® High Sensitivity and QuantiGlo® ELISA Kits are also available for this molecule.			

IL-1 Family Receptors			
Molecule	**Species**	**Quantikine® ELISA Kit (Catalog #)**	**DuoSet® ELISA Development System (Catalog #)**
IL-1 RI/IL-1 R1	Human		DY269
	Mouse		DY771
IL-1 RII/IL-1 R2	Human	DR1B00	DY263
IL-1 RAcP/IL-1 R3	Human		DY676
ST2/IL-33 R	Human	DST200	DY523B
	Mouse	MST200	DY1004

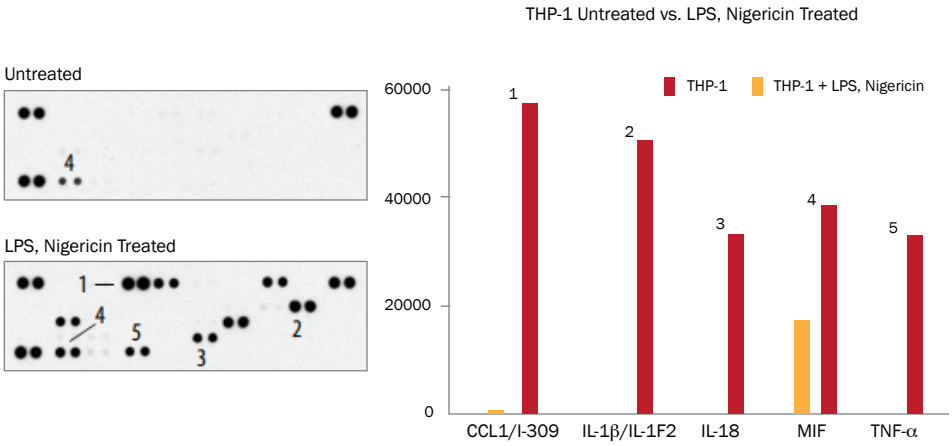
Multiplex Assays

In addition to our single analyte ELISA Kits, R&D Systems also offers multiplex assay options for simultaneously detecting multiple target analytes in qualified sample types. These assays include the membrane-based Proteome Profiler™ Antibody Arrays and the bead-based Luminex® Assays and Luminex® High Performance Assays. Several multianalyte profiling kits are available that allow the simultaneous detection of IL-1α/IL-1F1, IL-1β/IL-1F2, IL-1ra/IL-1F3, IL-1 RI/IL-1 R1, and/or IL-1 RII/IL-1 R2 or intracellular kinases involved in IL-1 family signaling such as MKKs, JNK, and p38.

Proteome Profiler™ Antibody Arrays

Proteome Profiler Antibody Arrays allow for the measurement of up to 119 proteins in a single sample. They require no specialized equipment and eliminate the need for multiple Western blot experiments.

Please visit our website at rndsystems.com/ProteomeProfiler for more information.

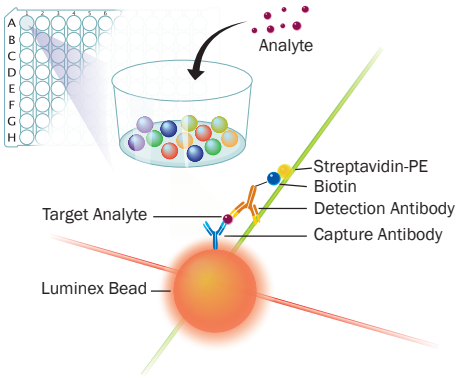


Simultaneous Detection of Multiple Analytes in Lipopolysaccharide-, Nigericin-treated THP-1 Cell Lysates using the Proteome Profiler™ Human Cytokine Array Kit. The THP-1 human acute monocytic leukemia cell line was either untreated or treated with 1 µg/mL lipopolysaccharide (LPS) for 4 hours and then 5 mM Nigericin (Catalog # 4312) for 1 hour. Cytokine expression in 500 µL of cell culture supernatant from the untreated and treated cells was analyzed using the Proteome Profiler™ Human Cytokine Array Kit (Catalog # ARY005B).

Luminex® Assays

R&D Systems offers two versions of our Luminex® bead-based assays. Our standard Luminex Assays provide the largest, customizable menu of analytes for bead-based multianalyte profiling using cell culture supernatants, serum, or plasma samples. These assays allow up to 100 analytes to be simultaneously profiled using polystyrene microparticles or 50 analytes using magnetic particles. Please visit rndsystems.com/LuminexAssay to see our industry-leading selection of analyte combinations.

Luminex High Performance Assays offer defined analyte panels for bead-based multianalyte profiling. These assays rely on panel-optimized diluents that provide maximum performance for a smaller group of analytes than our standard Luminex Assays. Each assay is fully validated for all sample types indicated for a given panel. In-house testing demonstrates that analyte concentrations determined using our Luminex High Performance Assays correlate closely with those obtained using our single analyte Quantikine® ELISA Kits. Please visit rndsystems.com/LuminexPerformance to view a list of available kits.



IL-1 Family Cytokine Signaling

The intracellular signaling pathways triggered by IL-1α/IL-1F1, IL-1β/IL-1F2, IL-18/IL-1 F4, IL-33/IL-1 F11, IL-36α/IL-1F6, IL-36β/IL-1F8, and IL-36γ/IL-1F9 activate MAPKs, NFκB, and AP-1, leading to the expression of pro-inflammatory cytokines, chemokines, and secondary mediators of the inflammatory response. R&D Systems offers a wide selection of antibodies, ELISA Kits, and multiplex assays for studying the intracellular signaling pathways activated downstream of the IL-1 family cytokines and their biological effects.

Select Antibodies, ELISA Kits, and Multiplex Assays for Detecting Signaling Molecules Involved in IL-1 Family Cytokine Signaling

	Molecule	R&D Systems® or Novus Biologicals® Antibodies		R&D Systems® ELISA/ Activity Assay Kits Catalog #	R&D Systems® Proteome Profiler™ Antibody Array Kits Catalog #	Tocris® Small Molecule Activators/Inhibitors
		Species	Catalog # (Applications)			
◆	ERK1	Human	MAB1940 (IHC, WB)	DYC1940		✓
◆		Human	AF1940 (WB)			
◆		Human/Mouse/Rat	AF1575 (IHC, WB)			
◆	Phospho-ERK1 (T202/Y204)	Human/Mouse/Rat		DYC1825	ARY002B	
◆	ERK1/2	Human/Mouse/Rat	MAB1576 (IHC, WB)			✓
◆		Human/Mouse/Rat	MAB15761 (WB)			
◆		Human/Mouse/Rat	AF1576 (SW, WB)			
◆	Phospho-ERK1 (T202/Y204)/ ERK2 (T185/Y187)	Human	MAB1825 (WB)		ARY003B	
◆		Human/Mouse	MAB18251 (SW, WB) *			
◆		Human/Mouse/Rat	MAB1018 (FC, ICC/IF, SW, WB)	DYC1018B; KCB1018		
◆		Human/Mouse/Rat	IC7806G (FC)			
◆		Human/Mouse/Rat	AF1018 (FC, IHC, SW, WB)			
◆		Human/Mouse/Rat	IC1018F (FC)			
◆	ERK2	Human/Mouse/Rat	MAB1230 (IHC, SW, WB)	DYC1230C		✓
◆		Human/Mouse/Rat	AF1230 (IHC, WB)			
◆	Phospho-ERK2 (T185/Y187)	Human/Mouse/Rat		DYC1483	ARY002B	
◆	c-Fos	Human	AF7254 (WB)			
◆	FosB/GOS3	Human	AF2214 (IHC, WB)			
◆		Human/Mouse	MAB2214 (WB)			
◆	FRA-1	Human	AF4935 (IHC, WB)			
◆		Human	MAB4935 (WB)			
◆	IκB-α	Human	MAB4299 (SW, WB)	DYC4299	ARY029; ARY027	✓
◆		Human/Mouse	AF4299 (WB)			
◆		Human/Mouse/Rat	NB100-56507 (FC, ICC/IF, IHC, IP, SW, WB)			
◆		Human/Mouse/Rat	NB100-56507AF405, AF488, AF647, AF700, APC, PCP, PE (FC, ICC/IF, IHC, IP, WB)			
◆	Phospho-IκB-α (S32/S36)	Human	AF4809 (WB)			
◆	IκB-β	Human/Rat	MAB3425 (WB)			
◆		Human/Mouse	AF5225 (WB)			
◆	IκB-ε	Human	MAB4300 (WB)		ARY029; ARY027	
◆		Human	AF4300 (IHC)			
◆		Mouse	AF4637 (WB)			

* Indicates a recombinant monoclonal antibody

Application key: **B/N** Blocking/Neutralization **ChIP** Chromatin Immunoprecipitation **FA** Functional Assay **FC** Flow Cytometry **ICC/IF** Immunocytochemistry/Immunofluorescence **IHC** Immunohistochemistry **IP** Immunoprecipitation **SW** Simple Western **WB** Western blot

Fluorocrome key for FAB/IC catalog numbers ending in: **A** Allophycocyanin **C** PerCP **F** Fluorescein **G** AlexaFluor® 488 **N** AlexaFluor® 700 **P** Phycoerythrin

◆ Indicates an antibody available from R&D Systems ◆ Indicates an antibody available from Novus Biologicals

Select Antibodies, ELISA Kits, and Multiplex Assays for Detecting Signaling Molecules Involved in IL-1 Family Cytokine Signaling

	Molecule	R&D Systems® or Novus Biologicals® Antibodies		R&D Systems® ELISA/ Activity Assay Kits Catalog #	R&D Systems® Proteome Profiler™ Antibody Array Kits Catalog #	Tocris® Small Molecule Activators/Inhibitors
		Species	Catalog # (Applications)			
◆	IKK-α	Human/Mouse/Rat	AF3768 (ICC/IF, WB)		ARY029	✓
◆		Human/Mouse	NB100-56704 (FC, ICC/IF, IHC, IP, SW, WB)			
◆		Human/Mouse	NBP2-27409AF405, AF488, AF647, AF700, APC, PCP, PE (FC, IHC, WB)			
◆	Phospho-IKK-α (S176/S180)	Human	MAB3768 (WB)			
◆	IKK-β	Human	AF4535 (WB)		ARY029	✓
◆		Human/Mouse	NB100-56509 (FC, ICC/IF, IHC, IP, SW, WB)			
◆		Human/Mouse	NBP100-56509AF405, AF488, AF647, AF700, APC, PCP, PE (FC, IHC, IP, WB)			
◆		Mouse	MAB7155 (WB)			
◆	IKK-γ	Human/Mouse/Rat	AF2684 (ICC/IF, SW, WB)			✓
◆		Human/Mouse/Rat	AF4365 (WB)			
◆		Human	NB100-56532 (FC, WB)			
◆		Human	NB100-56532AF405, AF488, AF647, AF700, APC, PCP, PE (FC, WB)			
◆	IKK-ε	Human	AF3199 (ICC/IF, WB)			✓
◆		Human/Mouse/Rat	MAB3199 (ICC/IF, WB)			
◆	IL-18 BPa	Human	MAB1191 (B/N)	DBP180; DY119		
◆		Human	MAB119 (WB)			
◆		Human	AF119 (B/N, WB)			
◆	IL-18 BPc	Mouse	AF129 (WB)			
◆	IL-18 BPd	Mouse	AF122 (B/N, WB)	DY122		
◆	IRAK1	Human	AF4048 (WB)		ARY029; ARY027	✓
◆	IRAK2	Human	MAB6690 (WB)			
◆	IRAK3	Human	AF6264 (WB)			
◆	IRAK4	Human	AF3919 (ICC/IF, WB)			✓
◆	JNK Pan Specific	Human/Mouse/Rat	AF1387 (IHC, WB)	DYC1205		✓
◆		Human/Mouse/Rat	MAB1387 (WB)			
◆	Phospho-JNK Pan Specific	Human/Mouse/Rat		DYC1387B	ARY002B; ARY003B	
◆	Phospho-JNK (T183/Y185)	Human/Mouse/Rat	AF1205 (IHC, SW, WB)		ARY018	
◆		Human/Mouse/Rat	MAB1205 (ICC/IF, SW, WB)			
◆	JNK1	Human/Mouse/Rat	MAB17761 (ICC/IF, WB)			✓
◆		Human/Mouse/Rat	MAB1776 (WB)			
◆	Phospho-JNK1 (T183/Y185)	Human			ARY002B	
◆	JNK1/2	Human/Mouse/Rat	MAB2076 (ICC/IF, WB)		ARY029	

* Indicates a recombinant monoclonal antibody

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Fluorocrome key for FAB/IC catalog numbers ending in: **A** Allophycocyanin **C** PerCP **F** Fluorescein **G** AlexaFluor® 488 **N** AlexaFluor® 700 **P** Phycoerythrin

◆ Indicates an antibody available from R&D Systems ◆ Indicates an antibody available from Novus Biologicals

	Molecule	R&D Systems® or Novus Biologicals® Antibodies		R&D Systems® ELISA/ Activity Assay Kits Catalog #	R&D Systems® Proteome Profiler™ Antibody Array Kits Catalog #	Tocris® Small Molecule Activators/Inhibitors
		Species	Catalog # (Applications)			
◆	JNK2	Human/Mouse/Rat	MAB1846 (ICC/IF, WB)	DYC1846	ARY029	✓
◆		Human/Mouse/Rat	AF1846 (WB)			
◆	Phospho-JNK2 (T183/Y185)	Human/Mouse/Rat		DYC2236	ARY002B	
◆	Phospho-JNK3 (T221/Y223)	Human			ARY002B	
◆	c-Jun	Human	MAB2670 (ICC/IF, WB)			✓
◆		Human	AF2670 (WB)			
◆	Phospho-c-Jun (S63)	Human	MAB8930 (ICC/IF, SW, WB)		ARY003B	
◆	JunB	Human	MAB4456 (WB)			
◆		Human	AF4456 (WB)			
◆	JunD	Human/Mouse	MAB5526 (WB)			
◆		Human/Mouse	AF5526 (WB)			
◆	MKK3	Human/Mouse/Rat	MAB2515 (ICC/IF, WB)			
◆	Phospho-MKK3 (S218/T222)	Human		DYC5585	ARY002B	
◆	MKK3/MKK6	Human/Mouse/Rat	MAB2514 (WB)			
◆	MKK4	Human	MAB3390 (ICC/IF)			
◆	Phospho-MKK4 (S257/T261)	Human/Mouse/Rat	AF2990 (ICC/IF, WB)			
◆	MKK6	Human/Mouse/Rat	MAB1604 (ICC/IF, WB)			
◆		Human/Mouse/Rat	AF16041 (WB)			
◆		Human/Mouse/Rat	AF1604 (WB)			
◆	Phospho-MKK6 (S207/T211)	Human		DYC5586	ARY002B	
◆	MKK7	Human	AF3579 (IHC, WB)			
◆		Human	MAB3579 (IHC)			
◆	MyD88	Human	AF2928 (FC, ICC/IF, SW, WB)	DY2928	ARY029	
◆		Human	MAB2928 (ICC/IF)			
◆		Human	MAB29281 (FC)			
◆		Human/Mouse	NBP2-27369 (FC, ICC/IF, WB)			
◆		Human/Mouse	NBP2-27369AF405, AF488, AF647, AF700, APC, PCP, PE (FC, ICC/IF, WB)			
◆		Mouse/Rat	AF3109 (FC, ICC/IF, SW, WB)			
◆		Mouse	MAB3109 (ICC/IF)			
◆	NFκB1	Human	MAB2697 (WB)		ARY018; ARY029	✓
◆		Human/Mouse	AF2697 (ChIP, WB)			
◆	NFκB2	Human	MAB28881 (ChIP, ICC/IF, WB)		ARY029	✓
◆	Phospho-p38 (T180/Y182)	Human/Mouse		KCB869		
◆	p38α	Human/Mouse/Rat	AF8691 (IHC, SW, WB)	DYC8691B		✓
◆		Human/Mouse/Rat	MAB869 (WB)			
◆	Phospho-p38α (T180/Y182)	Human	MAB8691 (WB)	DYC869B	ARY002B; ARY003B; ARY018	
◆		Human	MAB8692 (ICC/IF)			
◆	p38β	Human	MAB3274 (ICC/IF)			✓
◆	Phospho-p38β (T180/Y182)	Human			ARY002B	

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Select Antibodies, ELISA Kits, and Multiplex Assays for Detecting Signaling Molecules Involved in IL-1 Family Cytokine Signaling

	Molecule	R&D Systems® or Novus Biologicals® Antibodies		R&D Systems® ELISA/ Activity Assay Kits Catalog #	R&D Systems® Proteome Profiler™ Antibody Array Kits Catalog #	Tocris® Small Molecule Activators/Inhibitors
		Species	Catalog # (Applications)			
◆	p38γ	Human/Mouse/Rat	AF1347 (IHC, SW, WB)			✓
◆		Human/Mouse/Rat	MAB1347 (SW, WB)			
◆		Human/Mouse/Rat	AF1644 (WB)			
◆	Phospho-p38γ (T183/Y185)	Human/Mouse		DYC1664	ARY002B	
◆	p38δ	Human	AF1519 (IHC, WB)			✓
◆		Human	MAB1519 (WB)			
◆	Phospho-p38δ (T180/Y182)	Human			ARY002B	
◆	c-Rel	Human	MAB4606 (ICC/IF, WB)		ARY029	
◆		Human/Mouse	AF2699 (ChIP, ICC/IF, SW, WB)			
◆		Mouse	MAB2699 (WB)			
◆	RelA/NFκB p65	Human	MAB50781 (FC)		ARY029	
◆		Human/Mouse	MAB5078 (FC, ICC/IF, WB)			
◆		Human/Mouse	IC5078A, G, P (FC)			
◆		Human/Mouse	AF5078 (ChIP, SW, WB)			
◆		Human/Mouse/Rat	NB100-56712 (FC, IHC, SW, WB)			
◆		Human/Mouse/Rat	NBP2-27416AF405, AF488, AF647, AF700, APC, PCP, PE (FC, IHC, WB)			
◆	Phospho-RelA/NFκB p65 (S529)	Human	MAB7624 (WB)		ARY029	
◆	Phospho-RelA/NFκB p65 (S536)	Human	MAB7226 (ICC/IF, WB)			
◆		Human	MAB72261 (ICC/IF, SW, WB)			
◆	RelB	Human	MAB2698 (ICC/IF, IHC, WB)			
◆	TAB1	Human/Mouse	AF3578 (ICC/IF, WB)			
◆	TAK1	Human	MAB5307 (WB)			✓
◆	TRAF-6	Human	AF3284 (WB)		ARY027	

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Tocris® IL-1 Signaling-related Small Molecule Activators & Inhibitors

Tocris is the leading supplier of high performance reagents for life science research. The Tocris range of small molecules and peptides includes novel and exclusive cytokine receptor antagonists along with activators and inhibitors of specific kinases and transcription factors that regulate cytokine signaling pathways, including IL-1 family cytokine signaling.

Category	Product Name	Description	Cat. #
IL-1 Family Cytokines & Receptors			
IL-1 Inhibitors	AF 12198	Potent, selective human type I IL-1 receptor antagonist	1793
	CRID3 sodium salt	Potent NLRP3 inflammasome inhibitor; inhibits IL-1β production	5479
IL-1 Family Cytokine Signaling			
AP-1 Inhibitors	c-Jun Peptide	Peptide inhibitor of JNK/c-Jun interaction	1989
	SR 11302	AP-1 inhibitor	2476
ERK Inhibitors	FR 180204	Selective ERK inhibitor	3706
	TCS ERK 11e	Potent and selective ERK2 inhibitor	4465
IKK Inhibitors	ACHP	Selective IKKα and IKKβ inhibitor	4547
	BMS 345541	Selective allosteric inhibitor of IKK; anti-inflammatory	4806
	IKK 16	Selective inhibitor of IKK	2539
	IMD 0354	Inhibitor of IKKβ	2611
	ML 120B	IKK2-selective inhibitor	4899
	PF 184	Potent and selective IKKβ inhibitor	4238
	PS 1145	Selective IKK inhibitor; orally active	4569
	SC 514	IKKβ inhibitor; attenuates NFκB-induced gene expression	3318
	TPCA-1	Potent, selective inhibitor of IKKβ	2559
IRAK Inhibitors	AS 2444697	Potent and selective IRAK4 inhibitor	5430
	IRAK1/4 Inhibitor I	IRAK1 and IRAK4 inhibitor	5665
JNK Activators/ Inhibitors	Anisomycin	JNK, SAPK, and p38 activator	1290
	CEP 1347	Inhibitor of JNK signaling	4924
	SP 600125	Selective JNK inhibitor	1496
	TCS JNK 5a	Selective inhibitor of JNK2 and JNK3	2827
	TCS JNK 6o	Selective JNK inhibitor	3222
p38 MAPK Inhibitors	AMG 548	Potent and selective p38α inhibitor	3920
	RWJ 67657	Potent and selective p38α and p38β inhibitor	2999
	SB 202190	Potent and selective p38 MAPK inhibitor	1264
	SB 203580	Selective inhibitor of p38 MAPK; water soluble	1402
	SB 239063	Potent and selective p38 MAPK inhibitor	1962
	SCIO 469	Selective p38 MAPK inhibitor	3528
TAK1 Inhibitors	(5Z)-7-Oxozeaenol	Potent and selective TAK1 MAPKKK inhibitor	3604

Category	Product Name	Description	Cat. #
IκB/NFκB Activators/ Inhibitors	Betulinic acid	Activates NFκB; anti-tumor and anti-HIV agent	3906
	Prostratin	NFκB activator	5739
	Arctigenin	Inhibitor of IκBα phosphorylation; also inhibits MEK1	1777
	Bay 11-7821	Indirect inhibitor of IκBα phosphorylation	1744
	Bengamide B	Potent inhibitor of NFκB activation	5273
	Caffeic acid phenethyl ester	Specific inhibitor of NFκB activation	2743
	Cardamonin	Inhibitor of NFκB activation; anti-inflammatory	2509
	Gliotoxin	Immunosuppressant; inhibits NFκB and cytokine production	2637
	Honokiol	Blocks NFκB activation; also anti-inflammatory and antioxidant	4590
	IP7e	Blocks NFκB pathway	5699
	Luteolin	Blocks NFκB activation	2874
	MG 132	Inhibits NFκB activation; proteasome and calpain inhibitor	1748
	PR 39 (porcine)	IκBα inhibitor	1947
	Pristimerin	Suppresses NFκB activation	3731
	PSI	Prevents activation of NFκB; also inhibits the proteasome	4045
	Pyrrolidinedithiocarbamate ammonium	Inhibits NFκB	727
	Ro 106-9920	Inhibitor of NFκB activation	1778
	SP 100030	NFκB and AP-1 dual inhibitor	5309
	Sulfasalazine	Inhibitor of NFκB activation	4935
	Withaferin A	Inhibits NFκB activation	2816

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