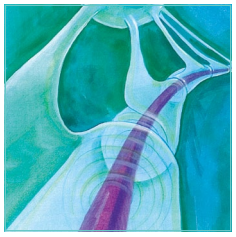


NEUROSCIENCE FOCUS: NEURODEGENERATIVE DISEASES

Neuroinflammation

FEATURED DATA:
Annexin V · CD3 · CD4 · CD25 · CD40L · CXCR4 · EGF · FGF basic · IFN-γ · IFN-γ R2 · IL-1α · IL-1β · IL-1ra · IL-2 Rα · IL-6 · IL-8 IL-10 · IL-17 · IL-23 · IL-23 R · TNF-α · Wnt-5a

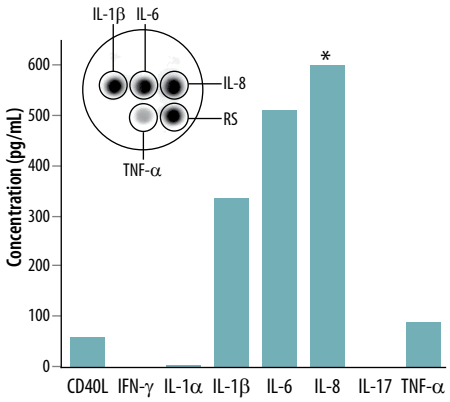
Introduction

Under normal physiological conditions, the brain is considered to be immunologically privileged. In fact, antigen presentation is actively suppressed, glial cells are maintained in a quiescent state, and immune components are excluded from the brain by the blood-brain barrier. However, neuronal injury, or the presence of toxic material, stimulates the release of pro-inflammatory mediators that induce a neuroinflammatory response, which eliminates the triggering insult and restores brain homeostasis and function. Acute neuroinflammatory responses are beneficial in that they repair existing damage and minimize further injury.

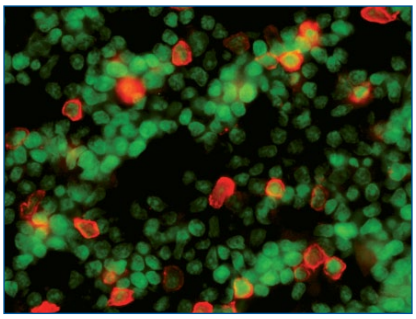
In contrast, the prolonged unregulated release of pro-inflammatory cytokines, such as TNF-α, IL-1β, and IFN-γ, and chemokines creates a detrimental neurotoxic milieu that damages neurons and compromises brain function. Chronic neuroinflammation is an important research field due to its central role in prevalent neurodegenerative diseases, including Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis, and multiple sclerosis. In general, these conditions are characterized by an initial acute neuroinflammatory response that fails to eliminate the causative agent. This is followed by a self-propagating cascade of pathogenic events that leads to a chronic neuroinflammatory state. The current consensus is that chronic inflammation in the central nervous system is not merely a secondary event, but actively contributes to disease progression.

R&D Systems Products for Neuroinflammation Research

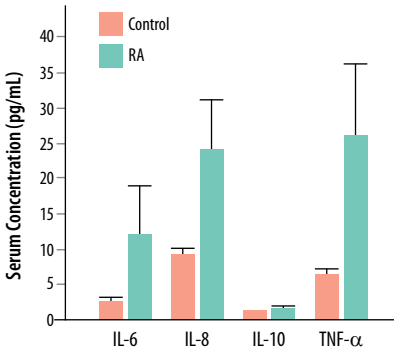
R&D Systems offers a wide range of high performance antibodies, the most referenced collection of high quality bioactive proteins and immunoassays in the industry, and multiplex assays for the simultaneous detection of multiple analytes.



Detection of Human Serum Cytokine Expression During Inflammation. In a research study, cytokines were detected in the serum of a subject with systemic lupus erythematosus using the Mosaic™ ELISA Human Cytokine Panel 1 (Catalog # MEA001). A representative image of an individual well for the data shown is inset. In addition to the 8 spotted capture antibodies, well images show a Reference Spot (RS, lower rightmost spot in each well). Reference Spots provide a strong positive signal to allow easy visualization of well location for template alignment during data analysis. *Without further sample dilution, the values for IL-8 were above the quantifiable range.



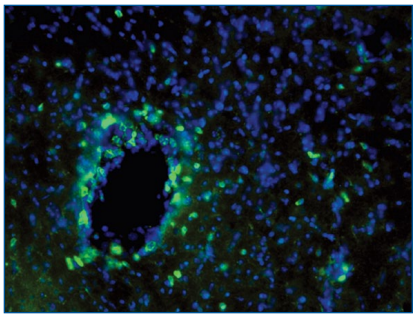
IL-2 Rα in Mouse Spleen. IL-2 Rα was detected in immersion-fixed frozen sections of mouse spleen using a Goat Anti-Mouse IL-2 Rα Antigen Affinity-purified Polyclonal Antibody (Catalog # AF2438). The tissue was stained with the NorthernLights™ 557-conjugated Donkey Anti-Goat IgG Secondary Antibody (Catalog # NL001; red) and counterstained (green).



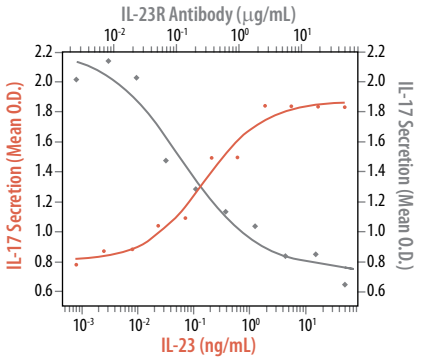
Detection of Human Serum Cytokine Expression During Inflammation. In a research study, cytokines were simultaneously detected in the serum of control subjects (n=8) and rheumatoid arthritis (RA) subjects (n=7) using the Human Inflammation Fluorokine® Multianalyte Profiling 12-Plex Kit (Catalog # LKT005). Values represent mean and standard error of the mean. This kit also contains analyte-specific antibody-coated beads to measure the levels of IL-1β, IL-2, IL-4, IL-5, IL-12, GM-CSF, IFN-γ, and VEGF.

R&D SYSTEMS®

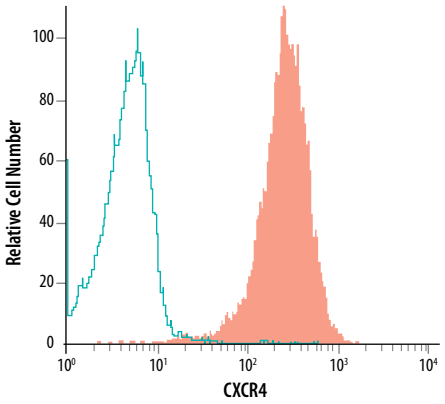
High Performance Antibodies



CD3 in Mouse Brain. CD3 was detected in perfusion-fixed frozen sections of HSV-1 infected mouse brain (perivascular cuffing) using a Rat Anti-Mouse CD3 Monoclonal Antibody (Catalog # MAB4841). Tissue was stained (green) and counterstained with DAPI (blue).

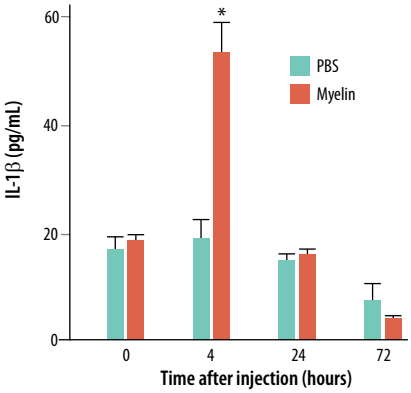


IL-17 Secretion Induced by IL-23 and Neutralization by a Mouse IL-23 R Antibody. In the presence of 10 ng/mL Recombinant Mouse IL-2 (Catalog # 402-ML), Recombinant Mouse IL-23 (Catalog # 1887-ML) stimulates IL-17 secretion in mouse splenocytes in a dose-dependent manner (orange line), as measured by the Mouse IL-17 Quantikine® ELISA Kit (Catalog # M1700). Under these conditions, IL-17 secretion elicited by 0.75 ng/mL Recombinant Mouse IL-23 is neutralized (gray line) by increasing concentrations of a Rat Anti-Mouse IL-23 R Monoclonal Antibody (Catalog # MAB1686).

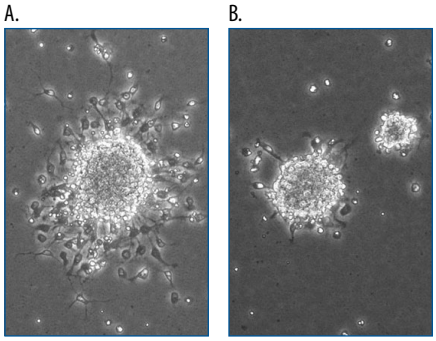


Detection of CXCR4 in the Jurkat Human Cell Line by Flow Cytometry. C-X-C Chemokine Receptor Type 4 (CXCR4) was detected in the Jurkat human leukemic T cell line using a PerCP-conjugated Mouse Anti-Human CXCR4 Monoclonal Antibody (Catalog # FAB170C, filled histogram) or a PerCP-conjugated Mouse IgG_{2A} Isotype Control (Catalog # IC003C, open histogram).

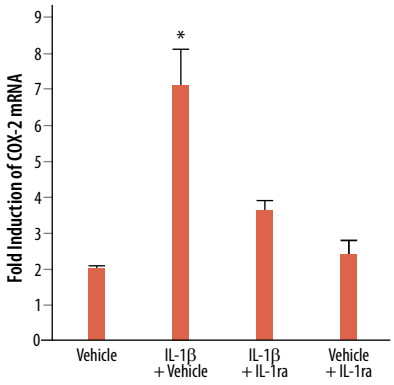
Recently Published Data in the Public Library of Science (PLoS)



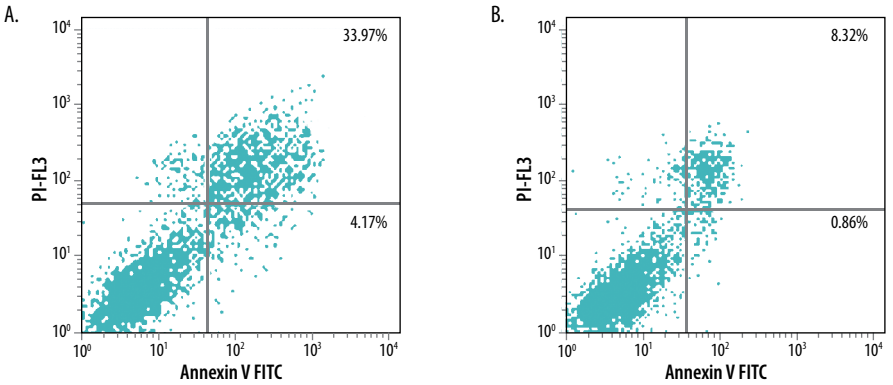
Measurement of IL-1β Levels Using the DuoSet® ELISA Development Kit. Wild type mice were injected intraperitoneally with PBS or myelin (25 mg/kg body weight) to induce the production of inflammatory cytokines. After the indicated time period, levels of IL-1β were measured in the peritoneal lavage fluid using the the Mouse IL-1β/IL-1F2 DuoSet ELISA Development Kit (Catalog # DY401). * $p<0.05$ compared to PBS Control. *Adapted from Sun, X., (2010) PLoS ONE 5:e9380.*



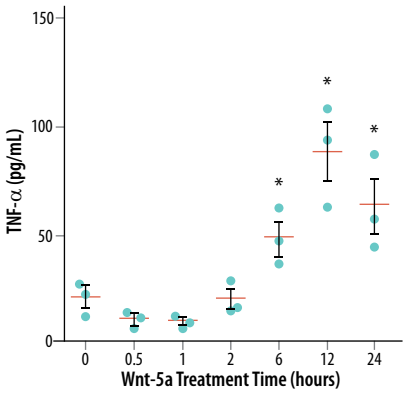
Activated Microglia Reduce Neurosphere Proliferation. The BV2 mouse microglial cell line was cultured in the presence of Recombinant Mouse EGF (Catalog # 2028-EG-200) and Recombinant Mouse FGF basic (Catalog # 3139-FB) for 2 days. Mouse neurospheres, cultured from post-natal day 7 BALB/c mouse pups, were grown in the absence (**A**) or presence (**B**) of BV2 cell media for 3 days. Phase contrast micrographs depict impaired migration and differentiation of cells from the periphery of the spheres in the presence BV2 media. *Adapted from Das, S., (2011) PLoS ONE 6:e17225.*



IL-1β Induces COX-2 Expression in Rat Trigeminal Ganglia. Rat trigeminal ganglia were cultured for 6 days, then treated with 10 ng/mL Recombinant Rat IL-1β/IL-1F2 (rrIL-1β, Catalog # 501-RL) for 3 hours. Treatment with rrIL-1β increased COX-2 mRNA expression as measured by quantitative real-time RT-PCR. The effect of rrIL-1β on COX-2 mRNA expression was inhibited following co-incubation with Recombinant Rat IL-1 Receptor Antagonist/IL-1F3 (IL-1Ra, Catalog # 1545-RA). * $p<0.05$ compared to vehicle. *Adapted from Neeb, L., (2011) PLoS ONE 6:e17360.*



Detection of Annexin V by Flow Cytometry. Primary cultures of mouse microglial cells were treated with morphine sulphate to induce apoptosis. Cells were stained using a Fluorescein-conjugated Recombinant Human Annexin V Reagent (Catalog # NX50) and propidium iodide (**A**). Pretreating the cells with the specific p38 MAPK inhibitor SB 203580 (Tocris Catalog # 1202) significantly attenuated the number of apoptotic microglia cells (**B**). *Adapted from He, L., (2011) PLoS ONE 6:e18190.*



Wnt-5a Induces TNF-α Secretion in Rat Cortical Neurons. Mouse cortical neurons were cultured for 12 to 14 days, then treated with 200 ng/mL Recombinant Mouse Wnt-5a (Catalog # 645-WN) for the indicated time period. TNF-α secretion induced by Wnt-5a treatment was measured using the Mouse TNF-α Quantikine ELISA Kit (Catalog # MTA00B). * $p<0.05$ compared to untreated. *Adapted from Li, B., (2011) PLoS ONE 6:e9380.*

R&D Systems Products for Neuroinflammation Research

MOLECULE	RECOMBINANT & NATURAL PROTEINS	ANTIBODIES	ELISAs	ELISpot KITS & DEVELOPMENT MODULES	FLOW CYTOMETRY KITS	MULTIPLEX/ARRAY ASSAY KITS & REAGENTS
Annexin V	H	H (WB)				
CCL21/6Ckine	H M	H (B/N, ELISA, IHC, WB) M (B/N, ELISA, IHC, WB)	H M		H	
CCR2		H (FC) M (FC)				
CCR5		H (B/N, FC, IHC, IP, WB) M (FC, WB) R (FC)				
CD3*		H (FA, FC, IHC, IP,) M (CD, FA, FC, IHC, IP)			H	
CD200	H M	H (B/N, ELISA, FC, IHC, WB) M (FC, IHC, WB)	H			
CD200 R1	H M	H (B/N, FC, IHC, WB) M (FC, IHC, WB)				
Chitinase 3-like 3/ ECF-L	M	M (WB)	M			
COX-1		H (FC, WB) M (WB)				
COX-2		H (FC, IHC, WB) M (FC, IHC, WB)	H M			
CXCR3		H (B/N, FC, IHC) M (FC)				
CXCR4		H (B/N, FC, IHC) M (B/N, FC, IHC) F (FC, IHC)				
CX3CL1/Fractalkine	H M R	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, WB) R (B/N, ELISA, IHC, WB)	H M R		H	
GFAP		H (IHC, WB)				H M R
CXCL2/GROβ/ MIP-2/CINC-3	H M R CR	H (B/N, FC, WB) M (B/N, ELISA, IHC, WB) R (B/N, ELISA, WB)	M R			M R
ICAM-1/CD54	H M R	H (B/N, ELISA, FC, IHC, IP, WB) M (B/N, ELISA, FC, IHC, WB) R (B/N, ELISA, FC, IHC, WB)	H M R			H R
IFN-γ	H M R P B Ca CR E F RM	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB) R (B/N, ELISA, IHC, WB) P (B/N, FC, IHC, WB) B (ELISA, FC, IHC, WB) Ca (B/N, ELISA, IHC, WB) CR (B/N, ELISA, WB) E (B/N, ELISA, IHC, WB) F (B/N, WB) RM (B/N, ELISA, WB)	H M R P B Ca CR E F Pr	H M R P Ca E F Pr		H M R
IL-1α/IL-1F1	H M R P CR	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, IHC, IP, WB) R (B/N, ELISA, WB) P (B/N, WB) CR (B/N, WB)	H M R		H	H R
IL-1β/IL-1F2	H M R P Ca CR E F RM	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, IP, WB) R (B/N, ELISA, IHC, WB) P (B/N, ELISA, WB) Ca (B/N, FC, WB) CR (B/N, WB) E (B/N, IHC, WB) F (B/N, ELISA, IHC, WB)	H M R P F	H P	H	H M R
IL-1ra/IL-1F3	H M R P E	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, WB) P (B/N, IHC, WB) E (ELISA, IHC, WB)	H M E			H
IL-1 RI	H M R	H (B/N, ELISA, FC, WB) M (B/N, FC, IHC, WB)	H			
IL-1 RII	H M	H (B/N, ELISA, FC, IHC, WB) M (FC, IHC, WB)	H			
IL-1 RAcP/IL-1 R3	H	H (FC, WB)				
IL-2	H M R P B Ca CR E F	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, WB) R (B/N, ELISA, IHC, WB) P (B/N, FC, IHC, WB) B (E, IHC, WB) Ca (B/N, ELISA, IHC, WB) CR (B/N, WB) E (ELISA, IHC, WB) F (B/N, ELISA, IHC, WB)	H M R B Ca E F	H M R Ca E F	H	H M R
IL-2 Rα	H M R Ca	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB) R (FC, IHC, WB)	H M			
IL-2 Rβ	H	H (B/N, FC, IHC, WB) M (FC, WB)				
IL-6	H M R P Ca CR E F	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB) R (B/N, ELISA, IHC, WB) P (B/N, ELISA, FC, IHC, WB) Ca (B/N, ELISA, FC, IHC, WB) CR (B/N, WB) E (B/N, IHC, WB) F (B/N, ELISA, IHC, WB)	H M R P Ca F	H M R Ca F	H	H M R
IL-6 Rα	H M	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB)	H M			
IL-8 RA/CXCR1		H (B/N, FC, IHC)				
IL-8 RB/CXCR2		H (B/N, FC, IHC) M (B/N, FC)				
IL-8/CXCL8	H P Ca F	H (B/N, ELISA, FC, IHC, WB) P (B/N, ELISA, WB) Ca (B/N, ELISA, IHC, WB) F (B/N, ELISA, IHC, WB)	H P Ca F	H	H	H
IL-10	H M R P Ca CR E F V	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB) R (B/N, ELISA, IHC, WB) P (B/N, ELISA, IHC, WB) Ca (B/N, ELISA, WB) CR (WB) E (B/N, ELISA, IHC, WB) F (B/N, ELISA, WB) V (B/N, WB)	H M R P Ca E F	H M Ca F	H	H M R
IL-10 Rα	H M	H (B/N, FC, IHC, WB) M (B/N, WB)				
IL-10 Rβ	H	H (B/N, FC, WB) M (FC, WB)				
IL-17	H M Ca	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, WB)	H M	H M Ca	H M	H M

MOLECULE	RECOMBINANT & NATURAL PROTEINS	ANTIBODIES	ELISAs	ELISpot KITS & DEVELOPMENT MODULES	FLOW CYTOMETRY KITS	MULTIPLEX/ARRAY ASSAY KITS & REAGENTS
IL-18/IL-1F4	H M R P F RM	H (B/N, ELISA, IP, WB) M (B/N, ELISA, IP, WB) R (B/N, WB) P (IHC, WB) Ca (IHC, WB) F (B/N, WB) RM (B/N, IHC, WB)	H M			R
IL-18 Rα/IL-1 R5	H	H (B/N, FC, IHC, WB) M (B/N, FC, WB)				
IL-18 Rβ/IL-1 R7	H	H (B/N, FC, WB) M (WB)				
IL-23	H M R	H (B/N, WB) M (B/N, ELISA, FC, WB) Ca (WB) F (WB)	H M			
IL-23 R	H M	H (FC, WB) M (B/N, FC, WB)			H	
IL-32	H	H (IHC, WB)				
Integrin αM/CD11b		H (FC, IHC, WB) M (CD, FC, IHC, IP)				
IP-10/CXCL10/ CRG-2	H M CR	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, IHC, WB) CR (B/N, WB)	H M	H		H
MCP-1/CCL2/JE	H M R Ca	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, WB) Ca (B/N, ELISA, IHC, WB) CR (WB)	H M Ca		H M	H M
MIP-1α/CCL3	H M R CR	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB) CR (B/N, WB)	H M		H M	H
MIP-1β/CCL4	H M Ca CR	H (B/N, ELISA, FC, IHC, WB) M (B/N, IHC, WB) Ca (IHC, WB) CR (B/N, WB)	H M		H	H
Nrf2		H (WB) M (WB) R (WB)				
Prostaglandin E2/ PGE2			Ms			
RANTES/CCL5	H M Ca CR F	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, IHC, WB) Ca (B/N, IHC) CR (B/N, WB) F (B/N, ELISA, WB)	H M F	H M	H	H
SDF-1α/CXCL12	H M F RM		H M		H	
SDF-1β/CXCL12	H F	H (B/N, ELISA, WB)				
SDF-1γ/CXCL12	H					
SDF-1 /CXCL12	H M F RM	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB)	H M		H	
TLR1	H M	H (FC, WB) M (FC, WB)				
TLR2	H M	H (B/N, ELISA, FC, WB) M (FC, WB)	H			
TLR3	H M	H (FC, WB) M (FC, WB)				
TLR4	H	H (B/N, FC, IHC, WB) M (FC)				
TLR4/MD-2 Complex	H					
TLR5		H (FC, IHC)				
TLR6	M	M (FC, WB)				
TLR7		H (FC)				
TLR9		H (FC)				
TLR10		H (WB)				
TNF-α	H M R P B Ca CR E F Rb RM	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, FC, IHC, WB) R (B/N, ELISA, IHC, WB) P (B/N, ELISA, IHC, WB) B (E, IHC, WB) Ca (B/N, ELISA, IHC, WB) CR (B/N, WB) E (B/N, ELISA, IHC, WB) Rb (B/N, WB) RM (B/N, ELISA, WB)	H M R P B Ca E F Pr RM	H M P Ca E Pr	H	H M R
TNF-β/TNFSF1	H M	H (B/N, ELISA, FC, IHC, WB) M (IHC, WB)	H			
TNF RI/TNFRSF1A	H M Ca	H (B/N, ELISA, FA, FC, IHC, WB) M (B/N, ELISA, FA, FC, IHC, IP, WB)	H M			
TNF RII/TNFRSF1B	H M	H (B/N, ELISA, FC, IHC, WB) M (E, FC, IHC, IP, WB)	H M			
VEGF	H M R C F Z	H (B/N, ELISA, FC, IHC, WB) M (B/N, ELISA, IHC, WB) R (B/N, ELISA, IHC, WB) C (B/N, ELISA, IHC, WB) Z (B/N, WB)	H M R C		H	H M R

Species Key: H Human M Mouse R Rat P Porcine B Bovine Ca Canine CR Cotton Rat E Equine F Feline Ms Multi-species Pr Primate Rb Rabbit RM Rhesus Macaque V Viral Z Zebrafish
Application Key: **B/N** Blocking/Neutralization **CD** Cell Depletion **ELISA** ELISA Capture and/or Detection **FA** Functional Assay **FC** Flow Cytometry **IHC** Immunohistochemistry **IP** Immunoprecipitation **WB** Western blot

* T Cell Enrichment Columns and T Cell Isolation Kits are also available for CD3.

Recent Citations: R&D Systems Neuroinflammation-related Products

1. Gupta, P. *et al.* (2011) Vascular endothelial growth factor-A (VEGF-A) and chemokine ligand-2 (CCL2) in Amyotrophic Lateral Sclerosis (ALS) patients. J. Neuroinflamm. **8**:47.

   Human CCL2/MCP-1 Quantikine ELISA Kit (Catalog # DCP00)

   Sample: Human cerebrospinal fluid and serum
   Application: ELISA

   Human VEGF Quantikine ELISA Kit (Catalog # DVE00)

   Sample: Human serum
   Application: ELISA

   Human VEGF QuantiGlo ELISA Kit (Catalog # QVE00B)

   Sample: Human cerebrospinal fluid
   Application: ELISA

2. Downer, E. *et al.* (2011) Identification of the synthetic cannabinoid R(+)WIN55,212-2 as a novel regulator of IFN Regulatory Factor 3 activation and IFN-β expression. J. Biol. Chem. **286**:10316.

   Human CXCL8/IL-8 DuoSet ELISA Development System (Catalog # DY208)

   Human TNF-α DuoSet ELISA Development System (Catalog # DY210)

   Sample: Human astrocyte and peripheral blood mononuclear cell culture supernates
   Application: ELISA

3. Drake, C. *et al.* (2011) Brain inflammation is induced by co-morbidities and risk factors for stroke. Brain Behav. Immun. *Article in Press*

   Goat Anti-Mouse ICAM-1/CD54 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF796)

   Goat Anti-Mouse VCAM-1/CD106 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF643)

   Sample: Mouse brain
   Application: Immunohistochemistry and immunofluorescence

4. Alvarez-Erviti, L. *et al.* (2011) Alpha-synuclein release by neurons activates the inflammatory response in a microglial cell line. Neurosci. Res. **69**:337.

   Mouse TNF-α Quantikine ELISA Kit (Catalog # MTA00)

   Mouse IL-1α/IL-1F1 Quantikine ELISA Kit (Catalog # MLA00)

   Sample: BV-2 mouse microglial cell line supernates
   Application: ELISA

5. Verma, S. *et al.* (2011) Cyclooxygenase-2 inhibitor blocks the production of West Nile virus-induced neuroinflammatory markers in astrocytes. J. Gen. Virol. **92**:507.

   Prostaglandin E2 Parameter Assay Kit (Catalog # KGE004B)

   Human IL-1 β/IL-1F2 Quantikine High Sensitivity ELISA Kit (Catalog # HSLB00C)

   Human IL-6 Quantikine ELISA Kit (Catalog # D6050)

   Human CXCL8/IL-8 Quantikine ELISA Kit (Catalog # D8000C)

   Human Total MMP-3 Quantikine ELISA Kit (Catalog # DMP300)

   Human MMP-9 Quantikine ELISA Kit (Catalog # DMP900)

   Sample: Human brain cortical astrocyte supernates
   Application: ELISA

6. Liesz, A. *et al.* (2011) Inhibition of lymphocyte trafficking shields the brain against deleterious neuroinflammation after stroke. Brain **134**:704.

   Mouse IFN-γ Quantikine ELISA Kit (Catalog # MIF00)

   Mouse IL-10 Quantikine ELISA Kit (Catalog # M1000)

   Sample: Mouse serum
   Application: ELISA

7. Richard, J.F. *et al.* (2011) Crawling phagocytes recruited in the brain vasculature after pertussis toxin exposure through IL6, ICAM1, and ITGαM. Brain Pathol. *Article in Press*

   Mouse IFN-γ Quantikine ELISA Kit (Catalog # MIF00)

   Mouse IL-1 β/IL-1F2 Quantikine ELISA Kit (Catalog # MLB00B)

   Mouse IL-6 Quantikine ELISA Kit (Catalog # M6000B)

   Mouse TNF-α Quantikine ELISA Kit (Catalog # MTA00)

   Sample: Mouse serum
   Application: ELISA

   Rat Anti-Mouse Integrin β7 Monoclonal Antibody (Catalog # MAB3060)

   Rat Anti-Mouse Integrin β1/CD29 Monoclonal Antibody (Catalog # MAB2405)

   Rat Anti-Mouse Integrin α4/CD49d Monoclonal Antibody (Catalog # MAB2450)

   Sample: Mouse
   Application: *In vivo*

8. Imamura, Y. *et al.* (2011) Interleukin-1β causes long-term potentiation deficiency in a mouse model of septic encephalopathy. *Article in Press*

   Goat Anti-Mouse IL-1 RI Antigen Affinity-purified Polyclonal Antibody (Catalog # AF771)

   Sample: Mouse brain and homogenized hippocampus
   Application: Immunohistochemistry and Western blot

9. Hergenroeder, G. *et al.* (2010) Serum IL-6: a candidate biomarker for intracranial pressure elevation following isolated traumatic brain injury. J. Neuroinflamm. **7**:19.

   Fluorokine Multianalyte Profiling Kit, Human Cytokine Panel A; IL-1α, IL-1β, IL-1ra, IL-2, IL-4, IL-5, IL-6, IL-10, and IL-17 (Catalog # LUH000)

   Sample: Human serum
   Application: Luminex multiplex immunoassay

   Human IL-6 Quantikine High Sensitivity ELISA (Catalog # HS600B)

   Sample: Human serum
   Application: ELISA

10. Noda, M. *et al.* (2011) Fractalkine attenuates excito-neurotoxicity via microglial clearance of damaged neurons and antioxidant enzyme Heme Oxygenase-1 expression. J. Biol. Chem. **286**:2308.

    Mouse CX3CL1/Fractalkine Quantikine ELISA Kit (Catalog # MCX310)

    Sample: Mouse microglial and cortical neuron supernates
    Application: ELISA

    Goat Anti-Mouse CX3CL1/Fractalkine Antigen Affinity-purified Polyclonal Antibody (Catalog # AF472)

    Sample: BV-2 mouse microglial cell line and primary cortical neurons
    Application: Neutralization

    Recombinant Mouse CX3CL1/Fractalkine (Chemokine Domain) (Catalog # 458-MF)

    Sample: BV-2 mouse microglial cell line and primary cortical neuron
    Application: Bioassay

11. Halleskog, C. *et al.* (2011) WNT signaling in activated microglia is proinflammatory. GLIA **59**:119.

    Recombinant Mouse Wnt-3a (Catalog # 1324-WN)

    Sample: N12 mouse microglia-like cell line
    Application: Bioassay

    Rat Anti-Mouse IL-6 Monoclonal Antibody (Catalog # MAB406)

    Goat Anti-Mouse IL-6 Biotinylated Antigen Affinity-purified Polyclonal Antibody (Catalog # BAF406)

    Rat Anti-Mouse IL-12 p70 Monoclonal Antibody (Catalog # MAB419)

    Goat Anti-Mouse IL-12 Biotinylated Antigen Affinity-purified Polyclonal Antibody (Catalog # BAF419)

    Goat Anti-Mouse TNF-α Antigen Affinity-purified Polyclonal Antibody (Catalog # AF-410-NA)

    Goat Anti-Mouse TNF-α Biotinylated Antigen Affinity-purified Polyclonal Antibody (Catalog # BAF410)

    Sample: Mouse primary microglial cell supernates
    Application: ELISA development

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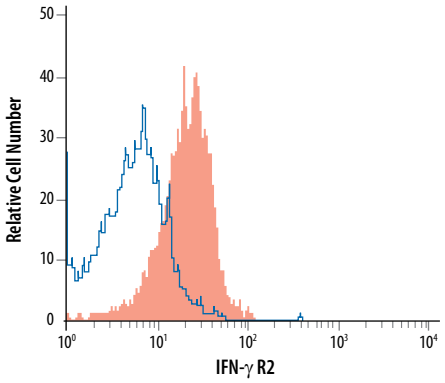
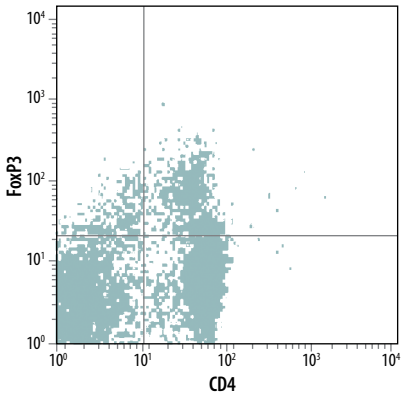
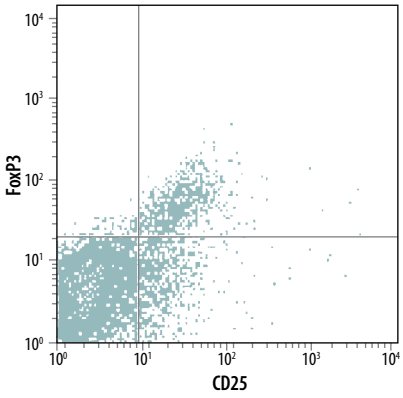
Flow Cytometry Reagents for Neuroinflammation Research



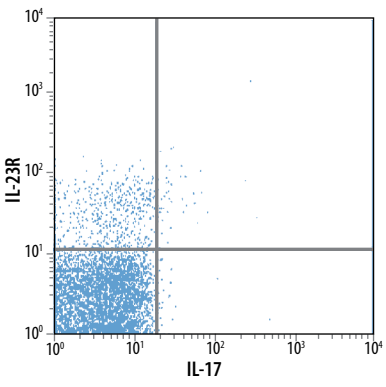
Detection of IFN-γ R2 in Human Granulocytes by Flow Cytometry. Interferon-γ Receptor 2 (IFN-γ R2) was detected in human granulocytes using an APC-conjugated Goat Anti-Human IFN-γ R2 Antigen Affinity-purified Polyclonal Antibody (Catalog # FAB773A, filled histogram) or an APC-conjugated Goat IgG Isotype Control (Catalog # IC108A, open histogram).



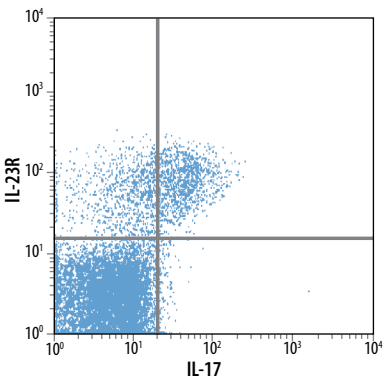


Detection of Human Treg Cells using Multi-Color Flow Cytometry. Human peripheral blood mononuclear cells (PBMCs) were assessed for FoxP3, CD25, and CD4 expression using antibodies and buffers included in the Human Regulatory T Cell Multi-Color Flow Cytometry Kit (Catalog # FMC013). Quadrants were set based on isotype controls.

A.



B.



Detection of IL-17 and IL-23 R by Multi-Color Flow Cytometry. Human peripheral blood mononuclear cells (PBMCs) were unstimulated (**A**) or stimulated (**B**) with PMA/ionomycin, Recombinant Human IL-23 (Catalog # 1290-IL), and lipopolysaccharide for 16 hours, then incubated with PMA/ionomycin and monesin for 2 - 4 hours. Cells were stained using the fluorochrome-conjugated antibodies included in the Human Th17 Cell Multi-Color Flow Cytometry Kit (Catalog # FMC007). This kit also contains antibodies for the detection of CD3 and IL-22. Dot plots were gated on $CD3^+$ cells.