

# Analyte Quarterly

Vol. 1 2023

Explore multiplex and singleplex biomarker detection assays, platforms, software, and services

- Single Molecule Counting (SMC®) High Sensitivity Assays
- MILLIPLEX® Multiplex Assays
- ELISAs & RIAs
- Belysa® Immunoassay Software
- Custom Assay Development



The Life Science business of Merck operates as MilliporeSigma in the U.S. and Canada.

**Millipore®**

Preparation, Separation,  
Filtration & Monitoring Products

## We Strive for the Ideal Immunoassay

Researchers rely on commercial immunoassays to study biomarker expression in a wide variety of research applications. With recent technological advances pushing the limits of protein quantification in sensitivity and multiplex analyte detection, we are committed to delivering the best possible immunoassays for your research needs. Whether you are using our industry-leading MILLIPLEX® multiplex panels to broadly survey multiple analytes, performing femtogram/mL biomarker analysis using the Single Molecule Counting (SMC®) ultrasensitive immunoassay platform, or examining single proteins with our tried-and-true ELISAs and RIAs, you can confidently expect reliable measurements, a simplified user experience, and knowledgeable scientific partners to help drive your biomarker project from hypothesis to publication.

### Advantages of Our Platforms

#### Published Performance

- Broadest analyte selection across research areas and species
- Over 15,000 published papers with data generated using our immunoassays
- Customizable, premixed, and bulk kit options to fit your exact research needs

#### Quality

- Over four decades of immunoassay development and manufacturing expertise
- Assays developed and quality tested for accurate, reproducible, and biologically relevant protein measurements
- Manufactured in facilities which are ISO 9001:2015 compliant, our products are for research use only (RUO) and not for use in clinical or for medical diagnostic purposes

#### User Experience

- Kit components pre-optimized for easy use and minimal preparation steps
- Comprehensive protocols with recommendations for optimal sample preparation
- Knowledgeable in-house and field-based scientific support for assays and instruments
- State-of-the-art Belysa® software for powerful immunoassay data analysis and reporting

### Complete Immunoassay Testing Platforms



	MILLIPLEX® Panels	SMC® Platform	ELISAs and RIAs
	<b>Accurately measure up to 48 proteins in a sample</b>	<b>Explore previously undetectable proteins</b>	<b>Trusted standards for protein quantitation</b>
Single/Multiplex	Multiplex	Singleplex	Singleplex
Sensitivity	Down to pg/mL	Down to fg/mL	Down to pg/mL
Sample Size	~25 µL (may be diluted)	5-100 µL	50-100 µL
Dynamic Range	3-5.5 log	4-5 log	2-3 log
Assay	MILLIPLEX® assay or any Luminex® assay	SMC® assay	Any ELISA (such as Conferma® ELISAs) or RIA
Instrument	Luminex®: xMAP®, INTELLIFLEX®, FLEXMAP 3D®, Luminex® 200™ Systems	SMCxPRO® System	Any ELISA reader, or gamma counter (for RIA)
Automation	Yes	Yes	No

## New Immunoassay Products

### NEW Kits

Description	Species	Cat. No.
<b>MILLIPLEX® Panels</b>		
Cytokine Autoantibody Expanded IgG Panel	Human	HCYTABG-17K
Cytokine Autoantibody IgA Panel	Human	HCYTABA-17K
Cytokine Autoantibody IgM Panel	Human	HCYTABM-17K
Cytokine/Chemokine/Growth Factor Panel B	Human	HCYTB-60K
Interferon Panel	Human	HIFN-130K
Metabolic Hormone Expanded Panel	Rat	RMHE-120K
<b>SMC® Kits</b>		
NF-L High Sensitivity Immunoassay Kit	Human	03-0202-00
<b>Conferma® ELISA Kits</b>		
IL-6 ELISA	Human	EZIL6-98K
IL-8 ELISA	Human	EZHIL8-100K
MCP-1 ELISA	Human	EZMCP1-99KRM
TNF- $\alpha$ ELISA	Human	EZHTNFA-150K

### Coming Soon

Description	Species	Cat. No.
<b>SMC® Kits</b>		
PD-1 High Sensitivity Immunoassay Kit	Human	Coming Soon!
PD-L1 High Sensitivity Immunoassay Kit	Human	Coming Soon!

### Introducing our SMC® Human NF-L High Sensitivity Immunoassay Kit

Reduce reliance on CSF samples and use noninvasive serum and plasma samples to measure low-abundant NF-L, one of the most highly studied neuroscience biomarkers in research today. Discover more at [SigmaAldrich.com/smc-neuro](http://SigmaAldrich.com/smc-neuro)

**MILLIPLEX® Multiplex Immunoassays**

**SMCxPRO® Platform**

**Low-Abundant Target Biomarker**

**Belysa® Curve Fitting Software supports all 3 platforms**

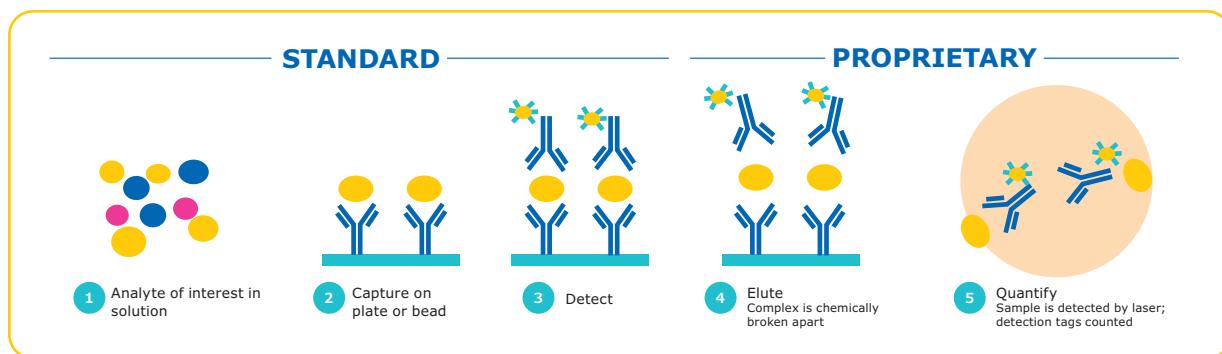
**Conferma® ELISAs**

**Targeted Biomarker**

# Single Molecule Counting (SMC<sup>®</sup>) Technology

## Reduced background + increased signal

SMC<sup>®</sup> technology provides maximum immunoassay performance while following a workflow similar to traditional ELISA technology, as shown below. By combining a unique assay elution step and robust digital counting, SMC<sup>®</sup> technology achieves improved signal-to-noise ratios over traditional immunoassay technologies. The SMC<sup>®</sup> technology thus provides enhanced quantification at both low and high levels of expression on one complete system.



### Steps 2-3

Antibodies translate each biomarker into a signal

### Step 4

Fluorescent dye-labeled detection antibodies dissociate from the immunocomplex

### Step 5

On the SMCxPRO<sup>®</sup> instrument, signal is collected from free-floating fluorochromes using a rotating laser, camera, and counting individual molecules by an Avalanche Photodiode

### Digital counting improves sensitivity and dynamic range

The SMCxPRO<sup>®</sup> instrument captures the sum of all digital events counted above the background threshold. The algorithm of the SMCxPRO<sup>®</sup> instrument computes digital events across a spectrum of time series for a single standard. The digital counting of molecules thus improves the assay sensitivity and extends the assay dynamic range beyond what can be achieved with traditional methods.

### What Is Single Molecule Counting (SMC<sup>®</sup>) Technology?

Satisfy your curiosity by visiting [SigmaAldrich.com/smc-learn](https://SigmaAldrich.com/smc-learn)

# SMC<sup>®</sup> Immunoassay Kits

Product Description	Cat. No.	LLOQ (pg/mL) <sup>1</sup>	Species <sup>2</sup>	Sample Type <sup>3</sup>
<b>Immunology/Inflammation</b>				
IFN-α2	03-0186-00	0.062	H	P,S
IFN-β1	03-0191-00	0.15	H	P,S
IFN-γ	03-0181-00	0.03	H	P,S
IL-1α2	03-0167-00	0.12	H	P,S
IL-1β	03-0160-00	0.20	H	P,S
IL-2	03-0195-00	0.09	H	P,S
IL-22	03-0162-00	0.10	H	P,S
IL-23	03-0157-00	0.10	H	P,S
IL-4	03-0161-00	0.04	H	P,S
IL-5	03-0168-00	0.04	H	P,S
IL-6	03-0155-00	0.08	H	P,S
IL-10	03-0176-00	0.10	H	P,S
IL-12p70	03-0182-00	0.05	H	P,S
IL-13	03-0156-00	0.04	H	P,S
IL-17A/F Heterodimer	03-0177-00	2.34	H	P,S
IL-17A	03-0159-00	0.07	H	P,S
IL-17F	03-0164-00	0.20	H	P,S
IL-18	03-0190-00	0.09	H	P,S
MCP-1	03-0187-00	0.15	H	P,S
TNFα	03-0163-00	0.20	H	P,S
VEGF-A	03-0180-00	0.20	H	P,S
<b>Neuroscience</b>				
Phospho-α-Synuclein(Ser129)	03-0188-00	0.1	H	P,S,C
Total-α-Synuclein	03-0196-00	1.95	H	P,S,C
Amyloid beta 1-40	03-0145-00	5.86	H,M,R	P,C
Amyloid beta 1-42	03-0146-00	0.98	H,M,R	P,C
BDNF	03-0171-00	0.04	H	P,S,C
GFAP	03-0203-00	0.12	H	P,S,C
NF-L <b>NEW</b>	03-0202-00	0.87	H	P,S,C
NPTX2	03-0199-00	0.58	H	P,S,C
SNAP-25	03-0206-00	0.26	H	P,S,C
TDP-43	03-0205-00	5.21	H	P,S,C
Phospho-Tau(Thr181)	03-0184-00	0.94	H	P,S,C
Total Tau	03-0185-00	2.34	H	P,S,C
UCHL1	03-0183-00	2.60	H	P,S,C
<b>Cardiovascular</b>				
cTnI	03-0154-00	0.69	H,Cy,R,C,GP	P,S
<b>Metabolism/Endocrinology</b>				
Glucagon	03-0153-00	0.78	H,M,R	P
<b>Immunogenicity</b>				
IgE <sup>4</sup>	03-0201-00	31.00	H	P,S
IgM <sup>4</sup>	03-0204-00	206.00	H	P,S
<b>Virology</b>				
SARS-CoV-2 RBD IgG <sup>5</sup>	03-0193-00	NA <sup>5</sup>	H	P,S
SARS-CoV-2 S1 IgA <sup>5</sup>	03-0197-00	NA <sup>5</sup>	H	P,S

<sup>1</sup> LLOQ: Lowest point on standard curve with CV < 20% and accuracy within 20% of expected values

<sup>2</sup> Optimized for first species type listed. Other listed species have been tested, but not optimized for peak performance.  
Key: H=Human; M=Mouse; R=Rat; GP=Guinea Pig; Cy=Cynomolgus Monkey; C=Canine

<sup>3</sup> Optimized for use in sample type(s) listed. Key: P=Plasma; S=Serum; L=Lysate; U=Urine; C=Cerebrospinal Fluid (CSF)

<sup>4</sup> Plate-based assay

<sup>5</sup> Qualitative assay

# Empower Your Biomarker Research

## Ultrasensitive Detection with the SMCxPRO<sup>®</sup> Immunoassay System

- Ultrasensitive detection down to femtogram/mL
- Lightweight (22.7 kg/50 lbs), fluidics-free benchtop instrument
- Results in hours (average assay time of ~4.5 hours and read time ~45 min)
- More than 40 SMC<sup>®</sup> assays available from a growing menu
- Bead-based and plate-based assays available
- Custom assay services and sample testing options
- Cat. No. **95-0100-00**



### Assay Performance and Instrument Specifications

Dynamic Range	> 4 logs
Precision	< 10% CV (response measurements from 30 fM calibrator, n=20)
Limit of Detection (LOD)	<1 fM
Slope	> 1.2 response/fM (determined from calibrator set: 0-300 fM of 150 kD antibody labeled with fluorophore)
Background	< 3 response/fM (determined from calibrator set: 0-300 fM of 150 kD antibody labeled with fluorophore)
Instrument Footprint	406.4 mm H x 355.6 mm W x 444.5 mm D (16"H x 14"W x 17.5"D)
Read Format	96-well custom plate optimized for SMC <sup>®</sup> technology
Regulatory Compliance	21 CFR part II and LIMS compatible

### Three Levels of Onsite Service Support for SMCxPRO<sup>®</sup> Platform

- **Total Service:** Unlimited visits including labor, travel, expenses, and all parts for any service for one year
- **Advanced Service:** Labor, travel, and expenses for one preventative maintenance and one floating visit for one year
- **Essential Service:** Labor for one preventative maintenance visit for one year

Supplemental Materials	Cat. No.
384-Well Barcoded SMC <sup>®</sup> Plate (Case of 32 Plates)	<b>ABB2-10160A</b>
384-Well SMC <sup>®</sup> Plate (Case of 32 Plates)	<b>ABB2-00160A</b>
One 384-Well SMC <sup>®</sup> Plate w/ 3 Plate Seals	<b>02-1008-00</b>
SMC <sup>®</sup> Immunogenicity Bead-Based Assay Development Kit	<b>03-0175-00</b>
SMC <sup>®</sup> Plate Washer Evaluation Reagent	<b>03-0165-00</b>

# MILLIPLEX® Analyte Index

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### What's in a MILLIPLEX® kit?



# HUMAN

## Immunology

### Human Cytokine/Chemokine/ Growth Factor Panel A

☐ (Cat. No. HCYTA-60K)	
38 (Cat. No. HCYTA-60K-PX38) ♦	
38 (Cat. No. HCYTA-60K-PXBK38) ♦	
48 (Cat. No. HCYTA-60K-PX48)	
48 (Cat. No. HCYTA-60K-PXBK48)	
sCD40L	IL-13 ♦
EGF ♦	IL-15 ♦
Eotaxin/CCL11 ♦	IL-17A/CTLA8 ♦
FGF-2/FGF-basic	IL-17E/IL-25 ♦
Flt3 Ligand	IL-17F ♦
Fractalkine/CX3CL1	IL-18 ♦
G-CSF ♦	IL-22 ♦
GM-CSF ♦	IL-27
GRO $\alpha$	IP-10/CXCL10 ♦
IFN $\alpha$ 2 ♦	MCP-1/CCL2 ♦
IFN $\gamma$ ♦	MCP-3/CCL7
IL-1 $\alpha$ ♦	M-CSF ♦
IL-1 $\beta$ ♦	MDC/CCL22
IL-1RA ♦	MIG/CXCL9 ♦
IL-2 ♦	MIP-1 $\alpha$ /CCL3 ♦
IL-3 ♦	MIP-1 $\beta$ /CCL4 ♦
IL-4 ♦	PDGF-AA ♦
IL-5 ♦	PDGF-AB/BB ♦
IL-6 ♦	RANTES/CCL5 ♦▲ <sup>o</sup>
IL-7 ♦	TGF $\alpha$
IL-8/CXCL8 ♦	TNF $\alpha$ ♦
IL-9	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA) ♦
IL-10 ♦	VEGF-A ♦
IL-12 (p40) ♦	
IL-12 (p70) ♦	

### Human Cytokine/Chemokine/ Growth Factor Panel B **NEW**

☐ (Cat. No. HCYTB-60K)	
38 (Cat. No. HCYTB-60K-PX38) ♦	
38 (Cat. No. HCYTB-60K-PXBK38) ♦	
48 (Cat. No. HCYTB-60K-PX48)	
48 (Cat. No. HCYTB-60K-PXBK48)	
6Ckine/CCL21 ♦	IL-20 ♦
BCA-1/CXCL13 ♦	IL-24
sFAS/TNFRSF6 ♦	IL-28A/IFN $\lambda$ 2 ♦
sFASL ♦	IL-31 ♦
sCD137/4-1BB/ TNFRSF9 ♦	IL-29/IFN $\lambda$ 1 ♦
APRIL ♦	IL-33/NF-HEV (mature) ♦
BAFF/Blys ♦	IL-21 ♦
IL-16 ♦	IL-34
CCL28	LIF ♦
CTACK/CCL27 ♦	Lymphotoxin/XCL1
CXCL16	MCP-2/CCL8 ♦
ENA-78/CXCL5 ♦	MCP-4/CCL13 ♦
Granzyme A ♦	MIP-1 $\delta$ /MIP-5/ CCL15 ♦
Eotaxin-2/CCL24/ MPIF-2 ♦	MIP-3 $\alpha$ /CCL20 ♦
Eotaxin-3/CCL26 ♦	I-TAC/CXCL11 ♦
IL-35	MIP-3 $\beta$ /CCL19
CXCL6/GCP-2	MPIF-1/CCL23
HMGB1 ♦	SCF ♦
I-309/CCL1 ♦	SDF-1/CXCL12 ♦
Granzyme B ♦	TARC/CCL17 ♦
IFN $\beta$ ♦	TPO ♦
IFN $\omega$ ♦	TRAIL/TNFSF10 ♦
IL-11	TSLP ♦
IL-23 ♦	Perforin ♦

### Human Cytokine/Chemokine Panel II

☐ (Cat. No. HCP2MAG-62K)	
25 (Cat. No. HCP2MAG-62K-PX23)	
25 (Bulk Cat. No. HCP2MAG62KPX23BK)	
6Ckine/CCL21/ Exodus-2	IL-28A/IFN $\lambda$ 2
BCA-1/CXCL13	IL-33/NF-HEV (mature)
CTACK/CCL27	LIF
ENA-78/CXCL5	MCP-2/CCL8
Eotaxin-2/CCL24/ MPIF-2	MCP-4/CCL13
Eotaxin-3/CCL26	MIP-1 $\delta$ /MIP-5/CCL15
I-309/CCL1	SCF
IL-16	SDF-1/CXCL12
IL-20	TARC/CCL17
IL-21	TPO
IL-23	TRAIL/TNFSF10
	TSLP

### Human Cytokine/Chemokine Panel III

(Cat. No. HCP3MAG-63K)	
HCC-1/CCL14 ▲	M-CSF
IL-11	MIG/CXCL9
IL-29/IFN $\lambda$ 1	MIP-3 $\alpha$ /CCL20
I-TAC/CXCL11	MIP-3 $\beta$ /CCL19
CXCL6/GCP-2	NAP-2/CXCL7 ▲
Lymphotoxin/XCL1	

### Human Cytokine/Chemokine Panel IV

☐ (Cat. No. HCP4MAG-64K)	
20 (Cat. No. HCY4MG-64K-PX20)	
20 (Bulk Cat. No. HCP4MG64KPX20BK)	
BAFF/Blys	IL-28B/IFN $\lambda$ 3
BRAK/CXCL14	IL-32 $\alpha$
CCL28	IL-34
CXCL16	IL-35
HCC-4/CCL16	IL-36 $\beta$ /IL-1F8
HMGB1 ●	IL-37/IL-1F7
IFN $\beta$	IL-38/IL-1F10
IL-14/ $\alpha$ -Taxilin	MIP-4/PARC/CCL18
IL-19	MPIF/CCL23
IL-24	YKL40/CHI3L1

### Human IL-18 Singleplex

(Cat. No. HIL18MAG-66K)	
IL-18	

### Human High Sensitivity T Cell

☐ (Cat. No. HSTCMAG-28SK)	
15 (Cat. No. HSTCMAG28SPMX13) ♦	
15 (Bulk Cat. No. HSTCMAG28SPMX13BK) ♦	
21 (Cat. No. HSTCMAG28SPMX21)	
21 (Bulk Cat. No. HSTCMAG28SPMX21BK)	
Fractalkine/CX3CL1	IL-12 (p70) ♦
GM-CSF ♦	IL-13 ♦
IFN $\gamma$ ♦	IL-17A/CTLA8
IL-1 $\beta$ ♦	IL-21
IL-2 ♦	IL-23
IL-4 ♦	I-TAC/CXCL11
IL-5 ♦	MIP-1 $\alpha$ /CCL3
IL-6 ♦	MIP-1 $\beta$ /CCL4
IL-7 ♦	MIP-3 $\alpha$ /CCL20
IL-8/CXCL8 ♦	TNF $\alpha$ ♦
IL-10 ♦	

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### Legend key for MILLIPLEX® kits

- † Analytes which cannot be plexed together:
  - Active and total
  - Free and total
- ♦ Available in Cat. No. listed
- ▼ Premix panel only
- Bulk indicates Space Saver Packaging
- ▲ These analytes cannot be plexed with other analytes in this panel in serum/plasma

- ▶ Requires a protease inhibitor during sample collection
- Requires sample extraction
- \*\* No standard/QC; antibody levels are reported as MFIs (Median Fluorescence Intensities)
- Serum/Plasma only
- ★ Tissue Culture samples only

- ^ Competitive assay format
- ☐ Available for custom premix
- Analyte requires a different sample dilution from others in panel
- Analyte cannot be measured in serum
- # Requires sample acidification
- § Analyte cannot be measured in plasma
- u Urine only

### 384-Well Human High Sensitivity T Cell

(Cat. No. HSTC384-28K)

21 (Cat. No. HSTCMAG384-PX21)

21 (Bulk Cat. No. HSTCMAG384PX21BK)

Fractalkine/CX3CL1	IL-12 (p70)
GM-CSF	IL-13
IFN $\gamma$	IL-17A/CTLA8
IL-1 $\beta$	IL-21
IL-2	IL-23
IL-4	I-TAC/CXCL11
IL-5	MIP-1 $\alpha$ /CCL3
IL-6	MIP-1 $\beta$ /CCL4
IL-7	MIP-3 $\alpha$ /CCL20
IL-8/CXCL8	TNF $\alpha$
IL-10	

### Human Th17

(Cat. No. HTH17MAG-14K)

25 (Cat. No. HT17MG-14K-PX25)

25 (Bulk Cat. No. HT17MAG14PMX25BK)

GM-CSF	IL-17E/IL-25
IFN $\gamma$	IL-17F
IL-1 $\beta$	IL-21
IL-2	IL-22
IL-4	IL-23
IL-5	IL-27
IL-6	IL-28A/IFN $\lambda$ 2
IL-9	IL-31
IL-10	IL-33/NF-HEV (mature)
IL-12 (p70)	MIP-3 $\alpha$ /CCL20
IL-13	TNF $\alpha$
IL-15	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)
IL-17A/CTLA8	

### Human CD8+ T Cell

17 (Cat. No. HCD8MAG-15K)

17 (Cat. No. HCD8MAG15K17PMX)

17 (Bulk Cat. No. HCD8MAG15KPX17BK)

sCD137/4-1BB/ TNFRSF9	IL-4
sFAS/TNFRSF6	IL-5
sFasL	IL-6
GM-CSF	IL-10
Granzyme A	IL-13
Granzyme B	MIP-1 $\alpha$ /CCL3
IFN $\gamma$	MIP-1 $\beta$ /CCL4
IL-2	Perforin
	TNF $\alpha$

### Human Soluble Cytokine Receptor

(Cat. No. HSCRMAG-32K)

14 (Cat. No. HSCRMAG32KPX14)

14 (Bulk Cat. No. HSCRMAG32PMX14BK)

sCD30	sIL-6R
sEGFR/sHER1/ErbB1	sRAGE
sGP130	sTNF RI
sIL-1RI	sTNF RII
sIL-1RII	sVEGFR1/sFlt-1
sIL-2R $\alpha$	sVEGFR2/sKDR/sFlk-1
sIL-4R	sVEGFR3/sFlt-4

### Human Complement Expanded Panel 1 **NEW**

1 (Cat. No. HCMPEX1-19K)

Adipsin/Factor D	C9
C2	Factor I
C4b	Mannose-Binding Lectin (MBL)
C5	Properdin
C5a	

### Human Complement Panel 2

1 (Cat. No. HCMP2MAG-19K)

C1q	C4
C3	Factor B
C3b	Factor H

### Human MMP Panel 1

(Cat. No. HMMP1MAG-55K)

MMP-3	MMP-13
MMP-12	

### Human MMP Panel 2

(Cat. No. HMMP2MAG-55K)

MMP-1	MMP-9
MMP-2	MMP-10
MMP-7	

### Human TIMP Panel 1 (Serum/Plasma samples)

(Cat. No. HTMP1MAG-54K)

TIMP-1	TIMP-2
--------	--------

### Human TIMP Panel 2 (Cell culture samples)

(Cat. No. HTMP2MAG-54K)

TIMP-1	TIMP-3
TIMP-2	TIMP-4

### Human Fibrosis Panel 1

(Cat. No. HFIB1-100K)

COMP	Uteroglobin
IL-18BP $\alpha$	

### Human Interferon **NEW**

(Cat. No. HIFN-130K)

9 (Cat. No. HIFN-130K-PMX9)

IFN $\alpha$ 2	IFN $\epsilon$
IFN $\beta$	IFN $\omega$
IFN $\gamma$	IL-28A/IFN $\lambda$ 2
IFN $\gamma$ Receptor 1 (IFNGR1)	IL-28B/IFN $\lambda$ 3
	IL-29/IFN $\lambda$ 1

## Immune Response

### Human Autoimmune Autoantibody\*\*

(Cat. No. HAIAB-10K)

**QUALITATIVE KIT**

$\beta$ 2-Glycoprotein	PM/Sci 100
C1q	Proteinase 3
CENP-A	Ribosomal P
CENP-B	RNP
Jo-1	RNP/Sm
Ku	Sci-70
Mi-2	Sm
Myeloperoxidase (MPO)	SSA/Ro52
PCNA	SSA/Ro60
PL-12 (Alanyl-tRNA Synthetase)	SSB/La

### Human Cytokine Autoantibody Expanded IgG, IgA, and IgM\*\* **NEW**

IgG (Cat. No. HCYTABG-17K)

IgA (Cat. No. HCYTABA-17K)

IgM (Cat. No. HCYTABM-17K)

**QUALITATIVE KIT**

BAFF/Blys	IL-8/CXCL8
G-CSF	IL-10
GM-CSF	IL-12 (p40)
IFN $\alpha$ 2	IL-15
IFN $\beta$	IL-17A/CTLA8
IFN $\gamma$	IL-17F
IFN $\omega$	IL-18
IL-1 $\alpha$	IL-22
IL-2	Osteopontin
IL-3	PF4
IL-4	TNF $\alpha$
IL-6	

### Human Sepsis Panel 1

(Cat. No. HSP1MAG-63K)

sFAS/TNFRSF6	MIF
sFasL	PAI-1 (total)
sICAM-1	sVCAM-1

### Human Sepsis Panel 2

(Cat. No. HSP2MAG-63K)

Granzyme B	MIP-1 $\alpha$ /CCL3
HSP70	MIP-1 $\beta$ /CCL4
IL-1 $\alpha$	MMP-8
IL-8/CXCL8	

## MILLIPLEX® Autoantibody Profiling

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**Human Sepsis Panel 3**

(Cat. No. HSP3MAG-63K)

Lactotransferrin (LTF)	Resistin
Neutrophil Elastase-2 (ELA2)	Thrombospondin-1 (TSP-1)
NGAL/Lipocalin-2	

**Human Immunoglobulin Isotyping**

☑ (Cat. No. HGAMMAG-301K)

IgA	IgG3
IgG1	IgG4
IgG2	IgM

**Human IgE – Singleplex**

(Cat. No. HGAMMAG-303E)

IgE
-----

**Virology****SARS-CoV-2 Antigen Panel 1 IgA\*\***

(Cat. No. HC19SERA1-85K)

**QUALITATIVE KIT**

SARS-CoV-2 N	SARS-CoV-2 Spike S1
SARS-CoV-2 RBD	SARS-CoV-2 Spike S2

**SARS-CoV-2 Antigen Panel 1 IgG\*\***

(Cat. No. HC19SERG1-85K)

**QUALITATIVE KIT**

SARS-CoV-2 N	SARS-CoV-2 Spike S1
SARS-CoV-2 RBD	SARS-CoV-2 Spike S2

**SARS-CoV-2 Antigen Panel 1 IgM\*\***

(Cat. No. HC19SERM1-85K)

**QUALITATIVE KIT**

SARS-CoV-2 N	SARS-CoV-2 Spike S1
SARS-CoV-2 RBD	SARS-CoV-2 Spike S2

**For Research Use Only. Not For Use In Diagnostic Procedures.**

**Metabolism/Endocrinology****Human Adipokine Panel 1 (Serum/Plasma samples)**

(Cat. No. HADK1MAG-61K)

Adiponectin	PAI-1 (total)
Adipsin/Factor D	Resistin
NGAL/Lipocalin-2	

**Human Adipokine Panel 2 (Serum/Plasma samples)**

(Cat. No. HADK2MAG-61K)

IL-1β	Leptin
IL-6	MCP-1/CCL2
IL-8/CXCL8	NGF
Insulin	TNFα

**Human Adipocyte (Cell culture samples)**

(Cat. No. HADCYMAG-61K)

Adiponectin	MCP-1/CCL2
HGF	NGF
IL-1β	PAI-1 (total)
IL-6	Resistin
IL-8/CXCL8	TNFα
Leptin	

**Human Diabetes ▼**

⑤ (Cat.No. HDIAB-34K-PMX5)

⑤ (Bulk Cat. No. HDIAB34KPMX5BK)

**NON-CONFIGURABLE KIT**

C-Peptide	Insulin
GLP-1 (active) †	Leptin
Glucagon †	

**Human Metabolic Hormone V3**

(Cat. No. HMH3-34K)

Amylin (active) † ‡	Insulin
Amylin (total) † ‡	Leptin
C-Peptide	MCP-1/CCL2
Ghrelin (active) †	Pancreatic Polypeptide (PP)
GIP (total)	
GLP-1 (active) † ‡	PYY (total)
GLP-1 (total) † ‡	Secretin
Glucagon †	TNFα
IL-6	

**Human Myokine**

(Cat. No. HMYOMAG-56K)

Apelin	IL-15
BDNF	Irisin
Erythropoietin (EPO)	LIF
FABP3	Myostatin/GDF8
FGF-21	Oncostatin-M (OSM)
Fractalkine/CX3CL1	Osteocrin (OSTN)/Musclin
FSTL1	
IL-6	Osteonectin/SPARC

**Human Aging Panel 1**

(Cat. No. HAGE1MAG-20K)

CTACK/CCL27	IL-6
FGF-21	IL-10*
GDF-11	IL-18
GDF15	Jag1
GnRH	Leptin

**Human Liver Protein**

(Cat. No. HLPFMAG-57K)

α-Fetoprotein (AFP)	FGF-19
ANGPTL3	FGF-21
ANGPTL4	FGF-23
ANGPTL6	HGF
FABP1	

**Human IGF Binding Protein †**

(Cat. No. HIGFBMAG-53K)

IGFBP1	IGFBP5
IGFBP2	IGFBP6
IGFBP3°	IGFBP7
IGFBP4	

**Human IGF ■**

(Cat. No. HIGFMAG-52K)

IGF-1	IGF-2
-------	-------

**Human Pituitary Panel 1**

(Cat. No. HPTP1MAG-66K)

ACTH	FSH
Agouti-Related Protein (AgRP)	GH
	LH
CNTF	TSH

**Cardiovascular****Human CVD Panel 1**

(Cat. No. HCVD1MAG-67K)

BNP	LIGHT
CK-MB	NT proBNP
CXCL6/GCP-2	Oncostatin-M (OSM)
CXCL16	Placental Growth Factor (PlGF)
Endocan-1 (ESM-1)	Troponin I (TnI)
FABP3	
FABP4	

**Human CVD Panel 2**

(Cat. No. HCVD2MAG-67K)

ADAMTS13	Myoglobin
D-dimer <sup>s</sup>	NGAL/Lipocalin-2
GDF15	sP-Selectin
sICAM-1	Serum Amyloid A
Myeloperoxidase (MPO)	sVCAM-1

**Legend key for MILLIPLEX® kits**

† Analytes which cannot be plexed together:  
– Active and total  
– Free and total

◆ Available in Cat. No. listed

▼ Premix panel only

Bulk indicates Space Saver Packaging

▲ These analytes cannot be plexed with other analytes in this panel in serum/plasma

‡ Requires a protease inhibitor during sample collection

■ Requires sample extraction

\*\* No standard/QC; antibody levels are reported as MFIs (Median Fluorescence Intensities)

● Serum/Plasma only

★ Tissue Culture samples only

^ Competitive assay format

☑ Available for custom premix

° Analyte requires a different sample dilution from others in panel

⊙ Analyte cannot be measured in serum

# Requires sample acidification

<sup>s</sup> Analyte cannot be measured in plasma

<sup>u</sup> Urine only

**Human CVD Panel 3  
(Acute Phase)**

(Cat. No. HCV3MAG-67K)

α-1-Acid Glycoprotein (AGP)	Haptoglobin
α-2-Macroglobulin	sL-Selectin
Adipsin/Factor D	Platelet Factor 4 (PF4)/CXCL4
CRP	Serum Amyloid P (SAP)
Fetuin A	
Fibrinogen ⊕	

**Human CVD Panel 4**

(Cat. No. HCV4MAG-67K)

sCD31/sPECAM-1	Thrombomodulin
sE-Selectin	Tissue Factor (TF)
Follistatin (FST)	Troponin T (TnT)
Pentraxin-3 (PTX3)	

**Human CVD Panel 6**

(Cat. No. HCV6MAG-67K)

sCD14	MCAM/MUC18
DPP4	Progranulin (pGRN)
Endostatin	ucMGP
LRG1	

**Human Apolipoprotein**

(Cat. No. APOMAG-62K)

Apo AI	Apo CII
Apo AII	Apo CIII
Apo B	Apo E

**Bone****Human Bone**

(Cat. No. HBNMAG-51K)

ACTH	Osteocalcin (OC)
DKK1	Osteopontin (OPN)
FGF-23	Osteoprotegerin (OPG)
IL-1β	PTH
IL-6	Sclerostin (SOST)
Insulin	TNFα
Leptin	

**Human RANKL – Singleplex**

(Cat. No. HRNKMAG-51K-01)

RANKL
-------

**Cancer****Human Immuno-Oncology  
Checkpoint Protein Panel 1**

(Cat. No. HCKP1-11K)

17 (Cat. No. HCKP1-11K-PX17)

17 (Bulk Cat. No. HCKP1-11K-PXBK17)

BTLA	HVEM
CD27	ICOS
CD28	LAG-3
CD40	PD-1
CD80/B7-1	PD-L1
CD86/B7-2	PD-L2
CTLA-4/CD152	TIM-3
GITR	TLR-2
GITRL	

**Human Immuno-Oncology  
Checkpoint Protein Panel 2**

(Cat. No. HCKP2-11K)

4-1BBL/TNFSF9	FGL1/Hepassocin
5'-NT/CD73	Galectin-1
APRIL	Galectin-3
Arginase-1	Granulysin
B7-H2/ICOSL	Granzyme B
B7-H3/CD276	IDO1
B7-H4/VTCN1	MICA
B7-H5/VISTA	MICB
B7-H6	Nectin-2
BAFF/BLyS	Nectin-4
CD25/IL-2Rα	OX40/CD134
CD30/TNFRSF8	Perforin
CD40L	PVR/CD155
CD137/4-1BB	Siglec-7
CD226/DNAM-1	Siglec-9
E-Cadherin	

**Human Cancer  
Autoantibody\*\***

(Cat. No. HCABMAG-13K)

**QUALITATIVE KIT**

CCNB1/Cyclin B1	IGF2BP2/IMP2
CTAG1B/NY-ESO-1	IGF2BP3/IMP3
ENO1	Mucin-1 (MUC1)
Galectin-1 (GAL1)	P16-INK4a
Galectin-3 (GAL3)	p53
HER2/ErbB2	SOX2
HIF-1α	Survivin/BIRC5
HSP60	

**Human Circulating Cancer  
Biomarker Panel 1**

(Cat. No. HCCBP1MAG-58K)

α-Fetoprotein (AFP)	IL-8/CXCL8
CA125	Leptin
CA15-3	MIF
CA19-9	Osteopontin (OPN)
CEA	Prolactin
CYFRA21-1	PSA (free)†
sFAS/TNFRSF6	PSA (total)†
sFasL	SCF
FGF-2/FGF-basic	TGFα
HCGβ	TNFα
HE4	TRAIL/TNFSF10
HGF	VEGF-A
IL-6	

**Human Circulating Cancer  
Biomarker Panel 3**

(Cat. No. HCCBP3MAG-58K)

Cathepsin D	Melanoma Inhibitory Activity (MIA)
Ferritin	Myeloperoxidase (MPO)
Fibroblast Activation Protein (FAP)	Sex Hormone Binding Globulin (SHBG)
Galectin-3	
IGFBP3 ⊖	

**Human Circulating Cancer  
Biomarker Panel 4**

(Cat. No. HCCB4MAG-58K)

ALDH1A1	Kallikrein-6
Carbonic Anhydrase 9 (CA9)	Mesothelin
CD44	Midkine
EpCAM	NCAM1/L1CAM/CD171
Hepsin	Transglutaminase 2 (TGM2)

**Human Cancer/Metastasis  
Biomarker Panel 1**

(Cat. No. HCMBMAG-22K)

DKK1	Osteoprotegerin (OPG)
GDF15	Periostin
Neuron-specific Enolase (NSE)	TRAP5
Osteonectin/SPARC	TWEAK
	YKL40/CHI3L1

**Human Angiogenesis/Growth  
Factor Panel 1**

(Cat. No. HAGP1MAG-12K)

Angiopoietin-2	HB-EGF
BMP-9	HGF
EGF	IL-8/CXCL8
Endoglin	Leptin
Endothelin-1	Placental Growth Factor (PIGF)
FGF-1/FGF-acidic	VEGF-A
FGF-2/FGF-basic	VEGF-C
Follistatin (FST)	VEGF-D
G-CSF	

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[SigmaAldrich.com/milliplex-cancer](https://SigmaAldrich.com/milliplex-cancer)

**Human Angiogenesis Panel 2**

(Cat. No. HANG2MAG-12K)

Angiostatin/Kringle	sIL-6Ra
sAXL	sNeuropilin-1 (sNRP-1)
sCD31/sPECAM-1	Osteopontin (OPN)
sc-Kit/sStem Cell Factor Receptor (SCFR)	PDGF-AB/BB
sE-Selectin	Thrombospondin-2 (TSP-2)
sEGFR/sHER1/sErbB1	sTIE-2
sHER2/sEGFR2/sErbB2	suPAR
sHER3/sEGFR3/sErbB3	sVEGFR1/sFlt-1
sHGFR/sc-Met	sVEGFR2/sKDR/sFlk-1
	sVEGFR3/sFlt-4

**Neuroscience****Human Amyloid Beta and Tau (CSF samples)**

(Cat. No. HNABTMAG-68K)

Amyloid beta 1-40	pTau (Thr181)
Amyloid beta 1-42	Tau (total)

**Human Neuroscience Panel 1 (CSF samples)**

(Cat. No. HNS1MAG-95K)

α-Synuclein	PARK5/Uchl1
Glial Fibrillary Acidic Protein (GFAP)	PARK7/DJ1
Neuron-specific Enolase (NSE)	Transglutaminase 2 (TGM2)

**Human Neuroscience Panel 2**

(Cat. No. HNS2MAG-95K)

Angiogenin (ANG) <sup>o</sup>	Ferritin
ApoE4 <sup>o</sup>	Neurogranin (NRGN)
FABP3	TREM2

**Human Neurodegenerative Disease Panel 1**

(Cat. No. HNDG1MAG-36K)

α-2-Macroglobulin	Complement Factor C3
Apo AI	
Apo CIII	Complement Factor H (CFH)
Apo E	

**Human Neurodegenerative Disease Panel 2**

(Cat. No. HNDG2MAG-36K)

α-1-Antitrypsin (A1AT)	MIP-4/PARC/CCL18
C4	PEDF
CRP	Serum Amyloid P (SAP)

**Human Neurodegenerative Disease Panel 3**

(Cat. No. HNDG3MAG-36K)

BDNF	PAI-1 (total)
Cathepsin D	PDGF-AA
sICAM-1	PDGF-AB/BB
Myeloperoxidase (MPO)	RANTES/CCL5
sNCAM	sVCAM-1

**Human Neurodegenerative Disease Panel 4 (CSF samples)**

(Cat. No. HNDG4MAG-36K)

Amyloid beta 1-40	sRAGE
Amyloid beta 1-42	S100B
GDNF	

**Human Neurological Disorders Panel 3**

(Cat. No. HND3MAG-39K)

Angiotensinogen (AGT)	Osteopontin (OPN)
Contactin-1	Soluble Superoxide Dismutase 1 (sSOD1)
Fetuin A <sup>o</sup>	Soluble Superoxide Dismutase 2 (sSOD2)
Kallikrein-6	

**Human Neuropeptide** ■ ▲

(Cat. No. HNP MAG-35K)

α-MSH	Oxytocin
β-Endorphin	Substance P
Neurotensin	

**Human Circadian Stress** ■ ▲

(Cat. No. HNC SMAG-35K)

Cortisol	Melatonin
----------	-----------

**Toxicity****Human Kidney Injury Panel 1 (Urine samples)**

(Cat. No. HKI1MAG-99K)

Calbindin	KIM-1
Collagen IV	Renin
GSTα	TFF-3
IP-10/CXCL10	TIMP-1

**Human Kidney Injury Panel 2 (Urine samples)**

(Cat. No. HKI2MAG-99K)

α-1-Microglobulin	EGF
Albumin	NGAL/Lipocalin-2
Clusterin	Osteopontin (OPN)
Cystatin C	

**Human Kidney Injury Panel 4 (Serum/Plasma samples)**

(Cat. No. HKI4MAG-99K)

EGF	Osteopontin (OPN)
FABP1	PTH
IP-10/CXCL10	Renin
KIM-1	

**Human Kidney Injury Panel 5 (Serum/Plasma samples)**

(Cat. No. HKI5MAG-99K)

α-1-Microglobulin	Osteoactivin
Collagen IV	TIMP-1
NGAL/Lipocalin-2	Uromodulin

**Human Kidney Injury Panel 6 (Serum/Plasma samples)**

(Cat. No. HKI6MAG-99K)

β-2-Microglobulin	Cystatin C
Clusterin	RBP4

**Human Liver Injury**

(Cat. No. HLINJ MAG-75K)

5'NT/CD73	MDH1
ARG1	SDH
GSTα	

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**Legend key for MILLIPLEX® kits**

† Analytes which cannot be plexed together:  
 - Active and total  
 - Free and total  
 ◆ Available in Cat. No. listed  
 ▼ Premix panel only  
 Bulk indicates Space Saver Packaging  
 ▲ These analytes cannot be plexed with other analytes in this panel in serum/plasma

▶ Requires a protease inhibitor during sample collection  
 ■ Requires sample extraction  
 \*\* No standard/QC; antibody levels are reported as MFIs (Median Fluorescence Intensities)  
 ● Serum/Plasma only  
 ★ Tissue Culture samples only

^ Competitive assay format  
 ● Available for custom premix  
 ○ Analyte requires a different sample dilution from others in panel  
 ⊙ Analyte cannot be measured in serum  
 # Requires sample acidification  
 § Analyte cannot be measured in plasma  
 u Urine only

## PRIMATE

## Immunology

Non-Human Primate Cytokine/  
Chemokine /Growth Factor  
Panel A **NEW**

- (Cat. No. PRCYTA-40K)
- (Cat. No. PRCYTA-40K-PX38)◆
- (Cat. No. PRCYTA-40K-BK38)◆
- (Cat. No. PRCYTA-40K-PX48)
- (Cat. No. PRCYTA-40K-BK48)

BCA-1/CXCL13	IL-15◆
sCD137/4-1BB/ TNFRSF9◆	IL-16
sCD40L◆	IL-17A/CTLA8◆
Eotaxin/CCL11	IL-17E/IL-25
sFASL◆	IL-18◆
FGF-2/FGF-basic	IL-21◆
Fractalkine/CX3CL1	IL-22◆
G-CSF◆	IL-23◆
GM-CSF◆	IL-28A/IFNA2
Granzyme A◆	IL-31
Granzyme B◆	IL-33/NF-HEV (mature)◆
IFNa2◆	IP-10/CXCL10◆
IFNy◆	I-TAC/CXCL11◆
IL-1α	MCP-1/CCL2◆
IL-1β◆	MIG/CXCL9◆
IL-1RA◆	MIP-1α/CCL3◆
IL-2◆	MIP-1β/CCL4◆
IL-4◆	MIP-3α/CCL20◆
IL-5◆	Perforin◆
IL-6◆	RANTES/CCL5◆▲◆
IL-7◆	TGFα◆
IL-8/CXCL8◆	TNFα◆
IL-10◆	TNFβ/LTA
IL-12 (p70)◆	VEGF-A◆

Non-Human Primate  
Cytokine/Chemokine Panel 1

- (Cat. No. PRCYTOMAG-40K)
- (Cat. No. PCYTMG-40K-PX23)
- (Bulk Cat. No. PRCYMAG40PMX23BK)

sCD40L	IL-12/23 (p40)
G-CSF	IL-13
GM-CSF	IL-15
IFNy	IL-17A/CTLA8
IL-1β	IL-18
IL-1Ra	MCP-1/CCL2
IL-2	MIP-1α/CCL3
IL-4	MIP-1β/CCL4
IL-5	TGFα
IL-6	TNFα
IL-8/CXCL8	VEGF-A
IL-10	

Non-Human Primate  
Cytokine/Chemokine Panel 2

- (Cat. No. PRCYT2MAG40K)
- (Cat. No. PRCYT2MAG40K-PX24)
- (Bulk Cat. No. PRCY2MG40PMX24BK)
- (Cat. No. PRCYT2MAG40K-PX25)
- (Bulk Cat. No. PRCY2MG40PMX25BK)

sCD137/4-1BB/ TNFRSF9	IL-17E/IL-25
Eotaxin/CCL11	IL-21
sFasL	IL-22
FGF-2/FGF-basic	IL-23
Fractalkine/CX3CL1	IL-28A/IFNA2
Granzyme A	IL-31
Granzyme B	IL-33/NF-HEV (mature)
IL-1α	IP-10/CXCL10
IL-2	MIP-3α/CCL20
IL-4	Perforin
IL-6	RANTES/CCL5▲
IL-16	TNFβ/Lymphotoxin-α (LTA)
IL-17A/CTLA8	

Metabolism/  
EndocrinologyNon-Human Primate  
Metabolic Hormone

(Cat. No. NHPMHMAG-45K)

Amylin (active)◆	Insulin
C-Peptide	Leptin
Ghrelin (active)◆	MCP-1/CCL2
GIP (total)	Pancreatic Polypeptide (PP)
GLP-1 (active)◆	PYY (total)
Glucagon◆	
IL-6	

Non-Human Primate Pituitary  
Panel 1

(Cat. No. NHPPT1MG-46K)

ACTH	FSH
Agouti-Related Protein (AgRP)	GH
CNTF	LH
	TSH

## MOUSE

## Immunology

Mouse Cytokine/Chemokine  
Panel 1

- (Cat. No. MCYTOMAG-70K)
- (Cat. No. MCYTOMAG-70K-PMX)◆
- (Bulk Cat. No. MCYTOMAG70PMX25BK)◆
- (Cat. No. MCYTOMAG-70K-PX32)
- (Bulk Cat. No. MCYTOMAG70PMX32BK)

Eotaxin/CCL11	IL-13◆
G-CSF◆	IL-15◆
GM-CSF◆	IL-17A/CTLA8◆
IFNy◆	IP-10/CXCL10◆
IL-1α◆	KC/GRO/CINC-1/ CXCL1◆
IL-1β◆	LIF
IL-2◆	LIX
IL-3	MCP-1/CCL2◆
IL-4◆	M-CSF
IL-5◆	MIG/CXCL9
IL-6◆	MIP-1α/CCL3◆
IL-7◆	MIP-1β/CCL4◆
IL-9◆	MIP-2/CXCL2◆
IL-10◆	RANTES/CCL5◆
IL-12 (p40)◆	TNFα◆
IL-12 (p70)◆	VEGF-A

Mouse Cytokine/  
Chemokine Panel 2

- (Cat. No. MECY2MAG-73K)
- (Cat. No. MECY2MAG-73KPMX)
- (Bulk Cat. No. MECY2MAG73KPMXBK)

Erythropoietin (EPO)	IL-17A/F
Exodus-2/ CCL21/6Ckine	MCP-5/CCL12
Fractalkine/CX3CL1	MDC/CCL22
IFNβ1	MIP-3α/CCL20
IFNy	MIP-3β/CCL19
IL-11	TARC/CCL17
IL-16	

## Mouse High Sensitivity T Cell

- (Cat. No. MHSTCMAG-70K)
- (Cat. No. MHSTCMAG-70KPMX)
- (Bulk Cat. No. MHSTCMAG-70KPMXBK)

GM-CSF	IL-10
IFNy	IL-12 (p70)
IL-1α	IL-13
IL-1β	IL-17A/CTLA8
IL-2	KC/GRO/CINC-1/ CXCL1
IL-4	LIX
IL-5	MCP-1/CCL2
IL-6	MIP-2/CXCL2
IL-7	TNFα

## Non-Human Primate Cytokine Analysis

Save time and sample with the largest bead-based non-human primate multiplex assay on the market.

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**Mouse Th17**

- ☉ (Cat. No. MTH17MAG-47K)  
 25 (Cat. No. MT17MAG47K-PX25)  
 25 (Bulk Cat. No. MT17MAG47PMX25BK)

sCD40L	IL-17E/IL-25
GM-CSF	IL-17F
IFN $\gamma$	IL-21
IL-1 $\beta$	IL-22
IL-2	IL-23
IL-4	IL-27
IL-5	IL-28B/IFN $\lambda$ 3
IL-6	IL-31
IL-10	IL-33/NF-HEV (mature)
IL-12 (p70)	MIP-3a/CCL20
IL-13	TNF $\alpha$
IL-15	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)
IL-17A/CTLA8	

**Mouse CD8+ T Cell**

- ☉ (Cat. No. MCD8MAG-48K)  
 15 (Cat. No. MCD8MAG48K-PX15)  
 15 (Bulk Cat. No. MCD8MAG48KPX15BK)

sCD137/4-1BB/ TNFRSF9	IL-4
sFas/TNFRSF6	IL-5
sFasL	IL-6
GM-CSF	IL-10
Granzyme B	IL-13
IFN $\gamma$	MIP-1 $\beta$ /CCL4
IL-2	RANTES/CCL5
	TNF $\alpha$

**Mouse Soluble Cytokine Receptor**

- ☉ (Cat. No. MSCRMAG-42K)

sCD30	sRAGE
sGP130	sTNF RI
sIL-1RI	sTNF RII
sIL-1RII	sVEGFR1/sFlt-1
sIL-2Ra	sVEGFR2/sKDR/sFlk-1
sIL-4R	sVEGFR3/sFlt-4
sIL-6R	

**Mouse MMP Panel 1 (Serum/Plasma samples)**

- (Cat. No. M MMP1MAG-79K)

MMP-2	MMP-8
MMP-3	

**Mouse MMP Panel 2 (Serum/Plasma samples)**

- (Cat. No. M MMP2MAG-79K)

proMMP-9	MMP-12
----------	--------

**Mouse MMP Panel 3 (Cell culture samples)**

- (Cat. No. M MMP3MAG-79K)

MMP-2	proMMP-9
MMP-3	MMP-12
MMP-8	

**Immune Response****Mouse Immunoglobulin Isotyping**

- ☉ (Cat. No. MGAMMAG-300K)

IgA	IgG2b
IgG1	IgG3
IgG2a	IgM

**Metabolism/Endocrinology****Mouse Adipokine (Serum/Plasma samples)**

- (Cat. No. MADKMAG-71K)

IL-6	PAI-1 (total)
Insulin	Resistin
Leptin	TNF $\alpha$
MCP-1/CCL2	

**Mouse Adipocyte (Cell culture samples)**

- (Cat. No. MADCYMAG-72K)

Adiponectin	PAI-1 (total)
IL-6	Resistin
Leptin	TNF $\alpha$
MCP-1/CCL2	

**Mouse Adiponectin – Singleplex (Serum/Plasma samples)**

- (Cat. No. MADPNMAG-70K-01)

Adiponectin
-------------

**Mouse Metabolic Hormone Expanded**

- (Cat. No. MMHE-44K)

Amylin (active) $\blacktriangleright$	Leptin
C-Peptide 2	MCP-1/CCL2
Ghrelin (active) $\blacktriangleright$	Pancreatic Polypeptide (PP)
GIP (total)	PYY (total)
GLP-1 (active) $\blacktriangleright$	Resistin
GLP-1 (total) $\blacktriangleright$	Secretin
Glucagon $\blacktriangleright$	TNF $\alpha$
IL-6	
Insulin	

**Mouse Myokine**

- (Cat. No. MMYOMAG-74K)

BDNF	Irisin
Erythropoietin (EPO) $\star$	LIF
FGF-21	Myostatin/GDF8
Follistatin-like Protein 1 (FSTL1)	Oncostatin-M (OSM)
IL-6	Osteocrin (OSTN)/Musclin
IL-15	Osteonectin/SPARC

**Mouse Aging Panel 1**

- (Cat. No. MAGE1MAG-25K)

CTACK/CCL27	Jag1
FGF-21	Leptin
GnRH	Notch1
IL-6	TNF $\alpha$

**Mouse Pituitary**

- (Cat. No. MPTMAG-49K)

ACTH	LH
BDNF	Prolactin
FSH	TSH
GH	

**Cardiovascular****Mouse CVD Panel 1**

- (Cat. No. MCVD1MAG-77K)

sCD31/sPECAM-1	ProMMP-9
sE-Selectin	sP-Selectin
sICAM-1	Thrombomodulin
PAI-1 (total)	

**Mouse CVD Panel 2**

- (Cat. No. MCVD2MAG-77K)

sCD40L	Oncostatin M (OSM)
CXCL16	Placental Growth Factor 2
Endocan-1 (ESM-1)	Troponin I (TnI)
Follistatin (FST)	Troponin T (TnT)
LIGHT	

**Legend key for MILLIPLEX® kits**

- $\dagger$  Analytes which cannot be plexed together:  
 – Active and total  
 – Free and total  
 $\blacklozenge$  Available in Cat. No. listed  
 $\blacktriangledown$  Premix panel only  
 Bulk indicates Space Saver Packaging  
 $\blacktriangle$  These analytes cannot be plexed with other analytes in this panel in serum/plasma

- $\blacktriangleright$  Requires a protease inhibitor during sample collection  
 $\blacksquare$  Requires sample extraction  
 $\star\star$  No standard/QC; antibody levels are reported as MFIs (Median Fluorescence Intensities)  
 $\bullet$  Serum/Plasma only  
 $\star$  Tissue Culture samples only

- $\wedge$  Competitive assay format  
 $\bullet$  Available for custom premix  
 $\circ$  Analyte requires a different sample dilution from others in panel  
 $\odot$  Analyte cannot be measured in serum  
 $\#$  Requires sample acidification  
 $\S$  Analyte cannot be measured in plasma  
 $\cup$  Urine only

**Mouse Acute Phase Panel 2**

(Cat. No. MAP2MAG-76K)

α-1-Acid Glycoprotein (AGP)	CRP
α-2-Macroglobulin	Haptoglobin
Adipsin/Factor D	Serum Amyloid P (SAP)

**Cancer****Mouse Angiogenesis / Growth Factor Panel 1**

(Cat. No. MAGPMAG-24K)

sALK-1	IL-6
Amphiregulin	IL-17A/CTLA8
Angiopoietin-2 ▲	KC/GRO/CINC-1/CXCL1
Betacellulin ▲	Leptin
sCD31/sPECAM-1 ▲	MCP-1/CCL2
EGF	MIP-1α/CCL3
Endoglin	Placental Growth Factor 2
Endothelin-1	Prolactin
sFasL	SDF-1/CXCL12
FGF-2/FGF-basic	TNFα
Follistatin (FST)	VEGF-A
G-CSF	VEGF-C
HGF	VEGF-D
IL-1β	

**Mouse Immuno-Oncology Checkpoint Protein Panel 1****NEW**

☐ (Cat. No. MCKP1-110K)

28 (Cat. No. MCKP1-110K-PX28)

28 (Bulk Cat No. MCKP1-110K-PBK28)

4-1BBL/TNFSF9	Galectin-1
5'-NT/CD73	Galectin-3
B7-H2/ICOSL	GITR
B7-H3/CD276	Granzyme B
BCA-1/CXCL13	HVEM
BTLA	IFNγ
CD137/4-1BB	IL-10
CD226/DNAM-1	LAG-3
CD25/IL-2Rα	PD-1
CD27	PD-L1
CD40	PD-L2
CD80/B7-1	TIM-3
CTLA-4/CD152	TLR-2
E-Cadherin	TNFα

**Neuroscience****Mouse Amyloid Beta**

(Cat. No. MABMAG-83K)

Amyloid beta 1-40	Amyloid beta 1-42
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**Mouse Neuropeptide** ■ ^

(Cat. No. RMNPMAG-83K)

α-MSH	Oxytocin
β-Endorphin	Substance P
Neurotensin	

**Toxicity****Mouse Kidney Injury Panel 1**

(Cat. No. MKI1MAG-94K)

β-2-Microglobulin <sup>u</sup>	Renin
IP-10/CXCL10	TIMP-1
KIM-1	VEGF-A <sup>u</sup>

**Mouse Kidney Injury Panel 2**

(Cat. No. MKI2MAG-94K)

Clusterin	NGAL/Lipocalin-2
Cystatin C	Osteopontin (OPN)
EGF	

**RAT****Immunology****Rat Cytokine/Chemokine**

☐ (Cat. No. RECYTMAG-65K)

27 (Cat. No. RECYMAG65K27PMX)

27 (Bulk Cat. No. RECYMAG65PMX27BK)

EGF	IL-10
Eotaxin/CCL11	IL-12 (p70)
Fractalkine/CX3CL1	IL-13
G-CSF	IL-17A/CTLA8
GM-CSF	IL-18
KC/GRO/CINC-1/CXCL1	IP-10/CXCL10
IFNγ	Leptin
IL-1α	LIX
IL-1β	MCP-1/CCL2
IL-2	MIP-1α/CCL3
IL-4	MIP-2/CXCL2
IL-5	RANTES/CCL5
IL-6	TNFα
	VEGF

**Metabolism/Endocrinology****Rat Adipokine (Serum/Plasma samples)**

(Cat. No. RADPKMAG-80K)

IL-1β	MCP-1/CCL2
IL-6	PAI-1 (total)
Insulin	TNFα
Leptin	

**Rat Adipocyte (Cell culture samples)**

(Cat. No. RADPCMAG-82K)

Adiponectin	MCP-1/CCL2
IL-1β	PAI-1 (total)
IL-6	TNFα
Leptin	

**Rat Metabolic Hormone Expanded** **NEW**

(Cat. No. RMHE-120K)

Amylin (active) <sup>▶</sup>	Insulin
C-Peptide 2	Leptin
Ghrelin (active) <sup>▶</sup>	MCP-1/CCL2
GIP (total)	Pancreatic Polypeptide (PP)
GLP-1 (active) <sup>+</sup> <sup>▶</sup>	PYY (total)
GLP-1 (total) <sup>+</sup> <sup>▶</sup>	Secretin
Glucagon <sup>▶</sup>	TNFα
IL-6	

**Rat Myokine**

(Cat. No. RMYOMAG-88K)

BDNF	IL-15
Erythropoietin (EPO)	Irisin
FGF-21	LIF
Follistatin-like Protein 1 (FSTL1)	Myostatin/GDF8
Fractalkine/CX3CL1	Osteocrin (OSTN)/Musclin
IL-6	Osteonectin/SPARC

**Rat Pituitary**

(Cat. No. RPTMAG-86K)

ACTH	LH
BDNF	Prolactin
FSH	TSH
GH	

**Rat Stress Hormone** ■

(Cat. No. RSHMAG-69K)

ACTH	Melatonin ^
Corticosterone ^	

**Rat Thyroid**

(Cat. No. RTHYMAG-30K)

T3 ^	TSH
T4 ^	

**Cardiovascular****Rat Cardiac Injury Panel 1**

(Cat. No. RCI1MAG-87K)

Cardiac Troponin I (cTnI)	FABP3
Cardiac Troponin T (cTnT)	Follistatin-like Protein 1 (FSTL1)
Creatine Kinase Muscle (CKM)	Myosin Light Chain 3 (MYL3)
	TIMP-1

**Quality in Every MILLIPLEX® Kit**

We pride ourselves in our quality R&amp;D, support, manufacturing, and QC.

Read more at: [SigmaAldrich.com/milliplex-quality](https://SigmaAldrich.com/milliplex-quality)

### Rat Vascular Injury Panel 1 (Serum/Plasma samples)

(Cat. No. RV1MAG-26K)

Caveolin-1	IL-6
Connective Tissue Growth Factor (CTGF)	MCP-1/ CCL2
KC/GRO/CINC-1/ CXCL1	PAI-1 (total)
	TIMP-1
	TNFα
	VEGF

### Rat Vascular Injury Panel 2 (Serum/Plasma samples)

(Cat. No. RV2MAG-26K)

Adiponectin	sICAM-1
sE-Selectin	

### Rat Vascular Injury Panel 3 (Serum/Plasma samples)

(Cat. No. RV3MAG-26K)

α-1-Acid Glycoprotein (AGP)	Haptoglobin
α-2-Macroglobulin (A2M)	

## Bone

### Rat Bone Panel 1 (Serum/Plasma samples)

(Cat. No. RBN1MAG-31K)

ACTH	Leptin
DKK1	Osteoprotegerin (OPG)
FGF-23	PTH
Insulin	Sclerostin (SOST)

## Neuroscience

### Rat Neuropeptide ■ ^

(Cat. No. RMNPMAG-83K)

α-MSH	Oxytocin
β-Endorphin	Substance P
Neurotensin	

## Toxicity

### Rat Kidney Toxicity Panel 1 (Urine samples)

(Cat. No. RKTX1MAG-37K)

Clusterin	Osteopontin (OPN)
GSTα^	TIMP-1
IP-10/CXCL10	VEGF-A
KIM-1	

### Rat Kidney Toxicity Panel 2 (Urine samples)

(Cat. No. RKTX2MAG-37K)

α-1-Acid Glycoprotein (AGP)	Cystatin C
Albumin^	EGF
β-2-Microglobulin	NGAL/Lipocalin-2

### Rat Liver Injury

(Cat. No. RLI1MAG-92K)

5'NT/CD73	GSTα
ARG1	SDH
GOT1	

# COMPANION/ AGRICULTURAL

## Immunology

### Bovine Cytokine/Chemokine Panel 1

- (Cat. No. BCYT1-33K)
- 15 (Cat. No. BCYT1-33K-PX15)
- 15 (Bulk Cat. No. BCYT1-33K-PXBK15)

IFNγ	IL-36RA/IL-1F5
IL-1α	IP-10/CXCL10
IL-1β	MCP-1/CCL2
IL-4	MIP-1α/CCL3
IL-6	MIP-1β/CCL4
IL-8/CXCL8	TNFα
IL-10	VEGF-A
IL-17A/CTLA8	

### Canine Cytokine/Chemokine

- (Cat. No. CCYTOMAG-90K)
- 13 (Cat. No. CCYTMG-90K-PX13)
- 13 (Bulk Cat. No. CCYTMAG90KPX13BK)

GM-CSF	IL-15
IFNγ	IL-18
IL-2	IP-10/CXCL10
IL-6	KC-like
IL-7	MCP-1/CCL2
IL-8/CXCL8	TNFα
IL-10	

### Chicken Cytokine/Chemokine

- (Cat. No. GCYT1-16K)
- 12 (Cat. No. GCYT1-16K-PX12)
- 12 (Cat. No. GCYT1-16K-PXBK12)

IFNα	IL-21
IFNγ	M-CSF
IL-2	MIP-1β/CCL4
IL-6	MIP-3α/CCL20
IL-10	RANTES/CCL5
IL-16	VEGF

### Equine Cytokine/Chemokine

- (Cat. No. EQCYTMAG-93K)
- 23 (Cat. No. EQCYTMG-93KPX23)
- 23 (Cat. No. EQCTMG93KPX23BK)

Eotaxin/CCL11	IL-6
FGF-2/FGF-basic	IL-8/CXCL8
Fractalkine/CX3CL1	IL-10
G-CSF	IL-12 (p70)
GM-CSF	IL-13
GRO	IL-17A/CTLA8
IFNγ	IL-18
IL-1α	IP-10/CXCL10
IL-1β	MCP-1/CCL2
IL-2	RANTES/CCL5
IL-4	TNFα
IL-5	

## MILLIPLEX® Veterinary Medicine and Animal Health Kits

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### Legend key for MILLIPLEX® kits

- † Analytes which cannot be plexed together:
  - Active and total
  - Free and total
- ◆ Available in Cat. No. listed
- ▼ Premix panel only
- Bulk indicates Space Saver Packaging
- ▲ These analytes cannot be plexed with other analytes in this panel in serum/plasma

- ▶ Requires a protease inhibitor during sample collection
- Requires sample extraction
- \*\* No standard/QC; antibody levels are reported as MFIs (Median Fluorescence Intensities)
- Serum/Plasma only
- ★ Tissue Culture samples only

- ^ Competitive assay format
- Available for custom premix
- Analyte requires a different sample dilution from others in panel
- Analyte cannot be measured in serum
- # Requires sample acidification
- § Analyte cannot be measured in plasma
- u Urine only

**Feline Cytokine/Chemokine ▼**

- 19 (Cat. No. FCYTMAG-20K-PMX)  
 19 (Bulk Cat. No. FCYTMAG20KPX19BK)  
**NON-CONFIGURABLE KIT**

sFAS/TNFRSF6	IL-13
Flt3 Ligand	IL-18
GM-CSF	KC/GRO/CINC-1/ CXCL1
IFN $\gamma$	MCP-1/CCL2
IL-1 $\beta$	PDGF-BB
IL-2	RANTES/CCL5
IL-4	SCF
IL-6	SDF-1/CXCL12
IL-8/CXCL8	TNF $\alpha$
IL-12 (p40)	

**Ovine Cytokine/Chemokine Panel 1**

- 20 (Cat. No. SCYT1-91K)  
 14 (Cat. No. SCYT-91K-PX14)  
 14 (Bulk Cat. No. SCYT-91K-PXBK14)

IFN $\gamma$	IL-17A/CTLA8
IL-1 $\alpha$	IL-36RA/IL-1F5
IL-1 $\beta$	IP-10/CXCL10
IL-4	MIP-1 $\alpha$ /CCL3
IL-6	MIP-1 $\beta$ /CCL4
IL-8/CXCL8	TNF $\alpha$
IL-10	VEGF-A

**Porcine Cytokine/Chemokine**

- 20 (Cat. No. PCYTMAG-23K)  
 15 (Cat. No. PCYTMAG-23K-13PX)  
 15 (Bulk Cat. No. PCYTMAG23PMX13BK)

GM-CSF	IL-6
IFN $\gamma$	IL-8/CXCL8
IL-1 $\alpha$	IL-10
IL-1 $\beta$	IL-12
IL-1Ra	IL-18
IL-2	TNF $\alpha$
IL-4	

**Metabolism/  
Endocrinology****Canine Gut Hormone**

(Cat. No. CGTMAG-98K)

Amylin (total) ▶	Insulin
Ghrelin (active) ▶	Leptin
GIP (total)	Pancreatic Polypeptide (PP)
GLP-1 (active) ▶	PYY (total)
Glucagon	

**Canine Pituitary Expanded Panel**

(Cat. No. CANPIT-96K)

ACTH	LH
FSH	Prolactin
GH	TSH

**Toxicity****Canine Kidney Toxicity Expanded Panel 1 (Urine samples)**

(Cat. No. CKT1MAG-97K)

Clusterin	MCP-1/CCL2
Cystatin C	NGAL/Lipocalin-2
IL-8/CXCL8	Osteopontin (OPN)
KIM-1	

**Canine Kidney Toxicity Panel 2 (Urine samples)**

(Cat. No. CKT2MAG-97K)

Albumin	RBP4
$\beta$ -2-Microglobulin	TFF-3

**MULTI-SPECIES****Immunology****Multi-Species TGF $\beta$  – Singleplex #**

(Cat. No. TGFBMAG-64K-01)  
 (Bulk Cat. No. TGFBMAG-64K-01BK)  
 Species: C, E, F, H, M, NHP, Por, R, guinea pig, hamster, rabbit

TGF $\beta$ 1
---------------

**Multi-Species TGF $\beta$  – 3 Plex ▼#**

(Cat. No. TGFBMAG-64K-03)  
 Species: H, M, NHP, R, guinea pig, hamster, mini pig; additionally, TGF- $\beta$ 1 and TGF- $\beta$ 2 can be detected in the serum of C, E, and rabbit

**NON-CONFIGURABLE KIT**

TGF $\beta$ 1	TGF $\beta$ 3
TGF $\beta$ 2	

**Metabolism/  
Endocrinology****Multi-Species Hormone ■ ^**

(Cat. No. MSHMAG-21K)  
 Species: C, E, F, H, M, NHP, Por, R, guinea pig, hamster, rabbit

Cortisol	Testosterone
Estradiol	T3
Progesterone	T4

**KITS TO BE PHASED OUT****Human Cytokine/Chemokine Panel I**

- 20 (Cat. No. HCYTOMAG-60K)  
 29 (Cat. No. HCYTMAG-60K-PX29)  
 29 (Bulk Cat. No. HCYTMAG60PMX29BK)  
 30 (Cat. No. HCYTMAG-60K-PX30) ♦  
 30 (Bulk Cat. No. HCYTMAG60PMX30BK) ♦  
 38 (Cat. No. HCYTMAG-60K-PX38)  
 38 (Bulk Cat. No. HCYTMAG60PMX38BK)  
 41 (Cat. No. HCYTMAG-60K-PX41)  
 41 (Bulk Cat. No. HCYTMAG60PMX41BK)

sCD40L	IL-9
EGF ♦	IL-10 ♦
Eotaxin/CCL11 ♦	IL-12 (p40) ♦
FGF-2/FGF-basic	IL-12 (p70) ♦
Flt3 Ligand	IL-13 ♦
Fractalkine/CX3CL1	IL-15 ♦
G-CSF ♦	IL-17A/CTLA8 ♦
GM-CSF ♦	IP-10/CXCL10 ♦
GRO	MCP-1/CCL2 ♦
IFN $\alpha$ 2 ♦	MCP-3/CCL7
IFN $\gamma$ ♦	MDC/CCL22
IL-1 $\alpha$ ♦	MIP-1 $\alpha$ /CCL3 ♦
IL-1 $\beta$ ♦	MIP-1 $\beta$ /CCL4 ♦
IL-1Ra ♦	PDGF-AA ▲ °
IL-2 ♦	PDGF-AB/BB ▲ °
IL-3 ♦	RANTES/CCL5 ▲ ♦
IL-4 ♦	TGF $\alpha$
IL-5 ♦	TNF $\alpha$ ♦
IL-6 ♦	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA) ♦
IL-7 ♦	VEGF-A ♦
IL-8/CXCL8 ♦	

**Human Metabolic Hormone**

(Cat. No. HMHEMAG-34K)

Amylin (active) ▶	IL-6
Amylin (total) ▶	Insulin
C-Peptide	Leptin
Ghrelin (active) ▶	MCP-1/CCL2
GIP (total)	Pancreatic Polypeptide (PP)
GLP-1 (active) ▶	PYY (total)
GLP-1 (total) ▶	TNF $\alpha$
Glucagon ▶	

**Rat Metabolic Hormone**

(Cat. No. RMHMAG-84K)

Amylin (active) ▶	Insulin
C-Peptide 2	Leptin
Ghrelin (active) ▶	MCP-1/CCL2
GIP (total)	Pancreatic Polypeptide (PP)
GLP-1 (active) ▶	PYY (total)
Glucagon ▶	TNF $\alpha$
IL-6	

# Cell Signaling MILLIPLEX® Assays

## Akt/mTOR (Phosphoprotein) – 11 Plex

(Cat. No. 48-611MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt/PKB	✓ (Ser473)	H, M, R	
GSK3α	✓ (Ser21)	H, M, R	
GSK3β	✓ (Ser9)	H, M, R	
IGF1R	✓ (Tyr1135/1136)	H, M	
IR	✓ (Tyr1162/1163)	H	
IRS1	✓ (Ser636)	H, M, R	
mTOR	✓ (Ser2448)	H, M, R	
p70S6 Kinase	✓ (Thr412)	H, M, R	
PTEN	✓ (Ser380)	H, M, R	
RPS6	✓ (Ser235/236)	H, M, R	
TSC2	✓ (Ser939)	H, M, R	

## Akt/mTOR (Total) – 11 Plex

(Cat. No. 48-612MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt/PKB	✓	H, M, R	
GSK3α	✓	H, M, R	
GSK3β	✓	H, M, R	
IGF1R	✓	H, M, R	
IR	✓	H, R	
IRS1	✓	H, M, R	
mTOR	✓	H, M, R	
p70S6 Kinase	✓	H, M, R	
PTEN	✓	H, M, R	
RPS6	✓	H, M, R	
TSC2	✓	H, M, R	

## Early Apoptosis – 7 Plex

(Cat. No. 48-669MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt/PKB	✓ (Ser473)	H, M, R	
BAD	✓ (Ser112)	H, M	
Bcl-2	✓ (Ser70)	H	
Active Caspase-8 (Asp384)	✓	H	
Active Caspase-9 (Asp315)	✓	H	
JNK/SAPK1	✓ (Thr183/Tyr185)	H, M, R	
p53	✓ (Ser46)	H	

## Human Bcl-2 Family Apoptosis Panel 1 - 6 Plex

(Cat. No. 48-682MAG) AB1 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
BAD	✓	✓ (Ser112)	H
BAX	✓		H
Bcl-xL/BAD (interaction)	✓		H
BIM	✓		H
Mcl-1/BIM (interaction)	✓		H

## Human Bcl-2 Family Apoptosis Panel 2 - 4 Plex

(Cat. No. 48-683MAG) AB1 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Bcl-2	✓		H
Bcl-xL	✓		H
Mcl-1	✓		H
NOXA/Mcl-1 (interaction)	✓		H

## Human DNA Damage/Genotoxicity – 7 Plex

(Cat. No. 48-621MAG) AB1 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
ATR	✓		H
Chk1		✓ (Ser345)	H, M, R
Chk2		✓ (Thr68)	H
H2A.X		✓ (Ser139)	H, M, R
MDM2	✓		H, M, R
p21	✓		H
p53		✓ (Ser15)	H

## MAPK/SAPK (Phosphoprotein) – 10 Plex

(Cat. No. 48-660MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
ATF2		✓ (Thr71)	H, M
c-Jun		✓ (Ser73)	H, M, R
Erk/MAPK 1/2		✓ (Thr185/Tyr187)	H, M, R
HSP27		✓ (Ser78)	H
JNK/SAPK1		✓ (Thr183/Tyr185)	H, M, R
MEK1		✓ (Ser222)	H, M, R
MSK1		✓ (Ser212)	H, M
p38/SAPK2A/B		✓ (Thr180/Tyr182)	H, M, R
p53		✓ (Ser15)	H
STAT1		✓ (Tyr701)	H, M

## Learn more about Cancer and Metastasis Signaling Pathways

Read about all of the kits that can elucidate your signaling research at [SigmaAldrich.com/milliplex-cancer-cs](https://SigmaAldrich.com/milliplex-cancer-cs)

- Can be plexed with other 2 Plexes
  - \* Cannot plex with other phospho Akt
  - ▼ Premix panel only
- AB1:** Uses Assay Buffer 1      **AB2:** Uses Assay Buffer 2
- H** Human      **M** Mouse      **R** Rat

**Human RTK (Phosphoprotein)**

(Choose analytes that meet your needs)

(Cat. No. HPRTKMAG-01K) AB1

Analyte	Total	Phosphorylated
c-Kit	(pan Tyr)	H
c-Met/HGFR	(pan Tyr)	H
ErbB1/EGFR	(pan Tyr)	H
ErbB2/HER2	(pan Tyr)	H
ErbB3/HER3	(pan Tyr)	H
ErbB4/HER4	(pan Tyr)	H
FGFR1	(pan Tyr)	H
Flt3	(pan Tyr)	H
IGF1R	(pan Tyr)	H
IR	(pan Tyr)	H
M-CSFR	(pan Tyr)	H
PDGFR $\alpha$	(pan Tyr)	H, M, R
PDGFR $\beta$	(pan Tyr)	H
TIE1	(pan Tyr)	H
TIE2	(pan Tyr)	H
VEGFR1/Flt-1	(pan Tyr)	H
VEGFR2/KDR/Fik-1	(pan Tyr)	H
VEGFR3/Flt-4	(pan Tyr)	H, M, R

**Multi-Pathway (Phosphoprotein) – 9 Plex**(Cat. No. 48-680MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated
Akt/PKB	✓ (Ser473)	H, M, R
CREB	✓ (Ser133)	H, M, R
Erk/MAPK 1/2	✓ (Thr185/Tyr187)	H, M, R
JNK/SAPK1	✓ (Thr183/Tyr185)	H, M, R
NF $\kappa$ B	✓ (Ser536)	H, M, R
p38/SAPK2A/B	✓ (Thr180/Tyr182)	H, M, R
p70S6 Kinase	✓ (Thr412)	H, M, R
STAT3	✓ (Ser727)	H, M, R
STAT5A/B	✓ (Tyr694/699)	H, M, R

**Multi-Pathway (Total) – 9 Plex**(Cat. No. 48-681MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated
Akt/PKB	✓	H, M, R
CREB	✓	H, M, R
Erk/MAPK 1/2	✓	H, M, R
JNK/SAPK1	✓	H, M, R
NF $\kappa$ B	✓	H, M, R
p38/SAPK2A/B	✓	H, M, R
p70S6 Kinase	✓	H, M, R
STAT3	✓	H, M, R
STAT5A/B	✓	H, M, R

**NF $\kappa$ B – 6 Plex**(Cat. No. 48-630MAG) AB1 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated
c-Myc	✓	H
FADD		✓ (Ser194) H
I $\kappa$ B $\alpha$		✓ (Ser32) H
IKK $\alpha$ / $\beta$		✓ (Ser177/181) H
NF $\kappa$ B		✓ (Ser536) H, M
TNFR1	✓	H

**Protein Translation – 6 Plex**(Cat. No. 48-655MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated
eIF2a		✓ (Ser51) H, M, R
eIF-4B		✓ (Ser422) H, M, R
eIF-4E		✓ (Ser209) H, M, R
eIF-4G		✓ (Ser1108) H, M, R
4E-BP1	✓	✓ (Thr37/46) H, M, R

**Human Ras-Raf Oncoprotein – 6 Plex**(Cat. No. 48-684MAG) AB2 ▼ **NON-CONFIGURABLE KIT** **NEW**

Analyte	Total	Phosphorylated
BRAF		✓ (Ser446) H, M, R
CRAF		✓ (Ser338) H, M, R
MEK1		✓ (Ser217/221) H, M, R
Ras	✓	H, M, R
RasG12D	✓	H
RasG12V	✓	H

**Src Family Kinase Active Site (Phosphoprotein) – 8 Plex**(Cat. No. 48-650MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated
Blk		✓ (Tyr389) H
Fgr		✓ (Tyr412) H, R
Fyn		✓ (Tyr420) H, M, R
Hck		✓ (Tyr411) H, M
Lck		✓ (Tyr394) H, M, R
Lyn		✓ (Tyr397) H, R
Src		✓ (Tyr419) H, M, R
Yes		✓ (Tyr421) H, M, R

**STAT (Phosphoprotein) – 5 Plex**(Cat. No. 48-610MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated
STAT1		✓ (Tyr701) H, M
STAT2		✓ (Tyr690) H
STAT3		✓ (Tyr705) H, M, R
STAT5A/B		✓ (Tyr694/699) H, M, R
STAT6		✓ (Tyr641) H

**T-Cell Receptor (Phosphoprotein) – 7 Plex**(Cat. No. 48-690MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
CD3ε		✓ (pan Tyr)	H
CREB		✓ (Ser133)	H, M, R
Erk/MAPK 1/2		✓ (Thr185/Tyr187)	H, M, R
LAT		✓ (pan Tyr)	H
Lck		✓ (pan Tyr)	H, M, R
Syk		✓ (pan Tyr)	H
ZAP-70		✓ (pan Tyr)	H

**TGFβ – 6 Plex**(Cat. No. 48-614MAG) AB2 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt/PKB		✓ (Ser473)	H, M, R
Erk/MAPK 1/2		✓ (Thr185/Tyr187)	H, M, R
SMAD2		✓ (Ser465/467)	H, M, R
SMAD3		✓ (Ser423/425)	H, M, R
SMAD4	✓		H, M, R
TGFβRII	✓		H

**Akt Phospho/Total – 2 Plex**(Cat. No. 48-618MAG) AB2 ▼ \* ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt/PKB		✓ (Ser473)	H, M, R
Akt/PKB	✓		H, M, R

**Akt1 Phospho/Total – 2 Plex**(Cat. No. 48-631MAG) AB2 ▼ \* ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt1		✓ (Ser473)	H, M, R
Akt1	✓		H, M, R

**Akt2 Phospho/Total – 2 Plex**(Cat. No. 48-632MAG) AB2 ▼ \* ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt2		✓ (Ser474)	H, M, R
Akt2	✓		H, M, R

**CREB Phospho/Total – 2 Plex**(Cat. No. 48-628MAG) AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
CREB		✓ (Ser133)	H, M, R
CREB	✓		H, M, R

**Erk/MAPK 1/2 Phospho/Total – 2 Plex**(Cat. No. 48-619MAG) AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Erk/MAPK 1/2		✓ (Thr185/Tyr187)	H, M, R
Erk/MAPK 1/2	✓		H, M, R

**JNK Phospho/Total – 2 Plex**(Cat. No. 48-622MAG) AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
JNK/SAPK1		✓ (Thr183/Tyr185)	H, M, R
JNK/SAPK1	✓		H, M, R

**mTOR Phospho/Total – 2 Plex**(Cat. No. 48-625MAG) AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
mTOR		✓ (Ser2448)	H, M, R
mTOR	✓		H, M

**p38 Phospho/Total – 2 Plex**(Cat. No. 48-624MAG) AB1 or AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
p38/SAPK2A/B		✓ (Thr180/Tyr182)	H, M, R
p38/SAPK2A/B	✓		H, M, R

**STAT3 Phospho/Total – 2 Plex**(Cat. No. 48-623MAG) AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
STAT3		✓ (Tyr705)	H, M, R
STAT3	✓		H, M, R

**MAPmate™ Singleplex Loading Control Assays**

Plex loading control MAPmate™ assays into existing MILLIPLEX® Cell Signaling Panels. Our Cell Signaling Buffer and Detection Kit (Cat. No. 48-602MAG), may be purchased if additional buffers are required.

MAPmate™ Kits	Species Homology (Buffer)	Cat. No.
β-Tubulin (total)	H, M, R (AB1 & AB2)	46-713MAG
GAPDH (total)	H (AB2)	46-667MAG

- Can be plexed with other 2 Plexes
- \* Cannot plex with other phospho Akt
- ▼ Premix panel only

AB1: Uses Assay Buffer 1  
AB2: Uses Assay Buffer 2

H Human  
M Mouse  
R Rat

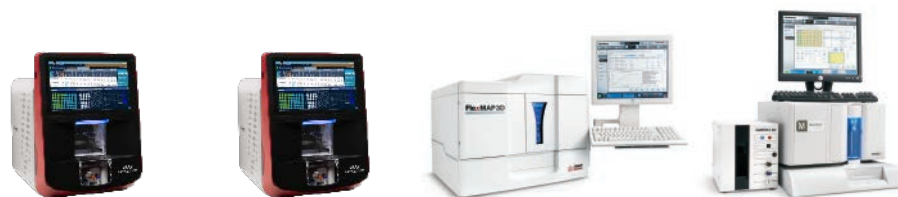
# Luminex® Multiplexing Platforms

## Driving Assay Consistency

Combined with the largest portfolio of multiplex analytes available, we provide you the power of Luminex® xMAP® technology, the most trusted, widely used platform for biomarker screening and protein analysis. As a Luminex® partner, we are a preferred distributor of Luminex® instruments, accessories, and software.

## Luminex® xMAP® technology offers many advantages compared to other immunoassay methods:

- **Multiplexing:** Data generated simultaneously is less prone to user error, enabling the end-user to construct cleaner data sets to explore multiple parameters.
- **Low sample volume:** With minimal hands-on time, screen multiple analytes in a single sample using a maximum of 25 µL per well.
- **Magnetic bead-based format:** Responds rapidly and efficiently to a magnetic field, enabling better and faster washing techniques, including high-throughput washing options.
- **Reproducibility:** High-volume production of xMAP® microspheres allows assay standardization that solid-phased flat arrays cannot provide.
- **Speed/high-throughput:** Simultaneously measure the concentration of a large number of different analytes in a single sample, in 96- or 384-well format, to do your work faster, gaining early and comprehensive data.



## Specifications

Instruments	xMAP® INTELLIFLEX® DR-SE*	xMAP® INTELLIFLEX®	FLEXMAP 3D®	Luminex® 200™
<b>Cat. No.</b>	<b>INTELLIFLEX-DRSE</b>	<b>INTELLIFLEX-RU0</b>	<b>40-014</b>	<b>40-012</b>
<b>Optics Hardware</b>	Lasers/APDs/PMTs	Lasers/APDs/PMTs	Lasers/APDs/PMTs	Lasers/APDs/PMTs
<b>Technology</b>	Flow-based	Flow-based	Flow-based	Flow-based
<b>Multiplexing</b>	Up to 500	Up to 500	Up to 500	Up to 100 (80 on MagPlex® microspheres)
<b>Dynamic Range**</b>	≥5.5 logs (RP1) ≥4.5 logs (RP2)	≥5.5 logs (RP1)	≥4.5 logs (RP1)	≥3.5 logs (RP1)
<b>Read Time</b>	96-well in ~20 min 384-well in ~75 min	96-well in ~20 min 384-well in ~75 min	96-well in ~20 min 384-well in ~75 min	96-well in ~45 min
<b>Applications</b>	Protein/nucleic acid	Protein/nucleic acid	Protein/nucleic acid	Protein/nucleic acid
<b>Automation-Compatible Hardware</b>	Front and side eject	Front eject only	Front eject only	Front eject only
<b>Reporter Laser</b>	532 nm (green) 405 nm (violet)	532 nm (green)	532 nm (green)	532 nm (green)
<b>IQ/OQ</b>	Yes	Yes	Yes	Yes
<b>21 CFR Compliance</b>	Yes	Yes	Yes	Yes
<b>Automation</b>	Yes	Yes	Yes	Yes
<b>Data Analysis</b>	Belysa® software	Belysa® software	xPONENT® basic + Belysa® software	xPONENT® basic + Belysa® software
<b>Plate Format</b>	96-well and 384-well	96-well and 384-well	96-well and 384-well	96-well
<b>Footprint (Linear Bench Space, including PC)</b>	58.4 cm x 61 cm x 6.2 cm	58.4 cm x 61 cm x 76.2 cm	110 cm x 62 cm x 63 cm	115 cm x 60 cm x 50 cm
<b>Weight</b>	54.4 kg (120 lbs)	54.4 kg (120 lbs)	77.1 kg (170 lbs)	49 kg (113 lbs)

\*DR-SE = dual reporter side eject; \*\*RP = reporter

Luminex® 200™ and FLEXMAP 3D® systems run on the Luminex® xPONENT® 4.3 data acquisition platform; the xMAP® INTELLIFLEX® systems run on INTELLIFLEX 1.0. All systems provide a consistent experience, from data input to results, no matter which instrument is used. All software adapts to fit the capabilities of each platform.

## Choose the Best Multiplexing Platform for Your Research

Compare the four available Luminex® xMAP® technology instruments in detail at: [SigmaAldrich.com/luminex](http://SigmaAldrich.com/luminex)



# Critical Reagents Characterized for Consistency

## Conferma® ELISAs

Conferma® ELISAs are developed with a focus on critical reagents to deliver assays with excellent detectability, sensitivity, and lot-to-lot consistency.

### Three Key Factors

**1. The standard protein:** Produced in HEK293 cells to improve folding, the recombinant protein is evaluated using mass spectrometry (LC-MS, RP-LC-UV-MS) to compare the sequence coverage and mass with the recognized mature sequence of the target.

IL-6 Calibrator Lot 028M4878V matches with the reported IL-6 sequence from UniProt accession # P05231, AA30-212.

**2. The monoclonal antibodies:** Multiple clones are produced and evaluated with close consideration of the antibody affinity towards the standard as determined by Surface Plasmon Resonance (SPR).

Multiple lots of IL-8 capture and detection antibodies were evaluated against the standard (antigen) using SPR (Biacore™ system). All monoclonal antibodies selected for Conferma® kits have a  $K_D$  < 2 nM which is considered high affinity.

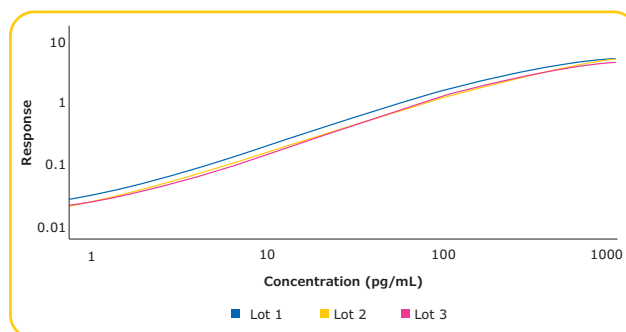
**3. Lot-to-lot consistency:** In addition to focusing on reagents, each assay batch is further verified at the finished kit level, comparing the standard curves for similarity and against a sample library (endogenous and spiked) to confirm they meet release criteria.

Three lots of TNF- $\alpha$  Conferma® ELISA kits were evaluated for consistency using mathematical parallelism with Belysa® software curve comparison results using Lot 1 as a reference against Lots 2 and 3. Mathematical variation between curves is considered perfect when parallelism is equal to 1.

### Measured Mass by RP-LC-UV-MS: 20,977 Da

Sequence Coverage for Calibrator Lot 028M4878V  
 VPPGEDSKDVAAPHRQPLTSSERIDKQIRYILDGISALRKETCNKSNMCESS  
 KEALAENNLNLPKMAEKDGGCFQSGFNEETCLVKIITGLLEFVYLEYLQNRFE  
 SSEEQARAVQMSTKVLIQFLQKKAKNLDAITTPDPTTNASLLTKLQAQNWVL  
 QDMTTHLILRSFKEFLQSSLRALRQM

Sample	Antigen	$K_D$ (nM)
IL-8 Capture Lot RB1907009	057M4835V	0.00062
IL-8 Capture Lot RB1901011	057M4835V	0.00041
IL-8 Capture Lot RB2003010	057M4835V	0.00086
IL-8 Detection Lot RB1907008	057M4835V	0.12
IL-8 Detection Lot RB1903010	057M4835V	0.15
IL-8 Detection Lot RB2003009	057M4835V	0.10
IL-8 Biotin Detection Lot RB1907008	057M4835V	0.08
IL-8 Biotin Detection Lot RB1903010	057M4835V	0.12
IL-8 Biotin Detection Lot RB2003009	057M4835V	0.16



Curve	Parallelism
Lot 2 vs. Lot 1	0.983
Lot 3 vs. Lot 1	0.992

### Conferma® ELISAs

Analyte	Std. Range (pg/mL)	LLOQ (Curve) (pg/mL)	Cat. No.
IL-6 (Human) <b>NEW</b>	1.17 - 150	1.17	EZIL6-98K
IL-8 (Human) <b>NEW</b>	0.82 - 200	0.82	EZHIL8-100K
MCP-1 (Human) <b>NEW</b>	7.81 - 1,000	7.81	EZMCP1-99KRM
TNF- $\alpha$ (Human) <b>NEW</b>	1.65 - 400	1.65	EZHTNFA-150K

# Millipore® Brand ELISAs

Metabolic/Endocrine/ Cytokine ELISAs	Species	Standard Curve Range	Sensitivity	Sample Volume	Cat. No.	Bulk Packaging Cat. No.*
Adiponectin	Human	1.56–200 ng/mL	0.2 ng/mL	10 µL	EZHADP-61K	EZHADP-61BK
Adiponectin (High Molecular Weight)	Human	1.5–200 ng/mL	0.5 ng/mL	10 µL	EZHMWAN-65K	
Adiponectin	Mouse	1–50 ng/mL	0.2 ng/mL	10 µL	EZMADP-60K	EZMADP-60BK
Adiponectin	Rat	3.125–200 ng/mL	0.4 ng/mL	10 µL	EZRADP-62K	
Amylin (active)	Human	1–100 pM	0.7 pM	50 µL	EZHA-52K	
C-Peptide	Human	0.2–20 ng/mL	0.05 ng/mL	10 µL	EZHCP-20K	EZHCP-20BK
C-Peptide	Canine	0.2–10 ng/mL	0.24 ng/mL	25 µL	EZCCP-47K	
C-Peptide 2	Mouse, Rat	25–1600 pM	15.0 pM	20 µL	EZRMCP2-21K	
C-Reactive Protein (CRP)	Human	0.12–10 ng/mL	0.2 ng/mL	2 µL	CYT298	
C-Reactive Protein (CRP)	Rat	4.9–10 ng/mL	2.5 ng/mL	2 µL	CYT294	
FGF-21	Human	31.25–2000 pg/mL	10.0 pg/mL	50 µL	EZHFGF21-19K	
FGF-21	Mouse, Rat	49.4–12,000 pg/mL	10.0 pg/mL	10 µL	EZRMFGF21-26K	
FGF-23	Human	9.9–2400 pg/mL	3.5 pg/mL	50 µL	EZHFGF23-32K	EZHFGF23-32BK
Ghrelin (active)	Human	25–2000 pg/mL	15.0 pg/mL	20 µL	EZGRA-88K	EZGRA-88BK
Ghrelin (active)	Mouse, Rat	25–2000 pg/mL	8.0 pg/mL	20 µL	EZRGRA-90K	
Ghrelin (total)	Human	100–5000 pg/mL	50.0 pg/mL	20 µL	EZGRT-89K	EZGRT-89BK
Ghrelin (total)	Mouse, Rat	0.1–10 ng/mL	0.04 ng/mL	20 µL	EZRGR-91K	
GIP (total)	Human	8.2–2000 pg/mL	4.2 pg/mL	20 µL	EZHGIP-54K	EZHGIP-54BK
GIP (total)	Mouse, Rat	8.2–2000 pg/mL	4.2 pg/mL	10 µL	EZRMGIP-55K	EZRMGIP-55BK
GLP-1 (active)	Multi-Species	2–100 pM	1.0 pM	100 µL	EGLP-35K	EGLP-35BK
GLP-1 High Sensitivity (active) Δ••	Multi-Species	See data sheet	0.14 pM	50 µL	EZGLPHS-35K	EZGLPHS-35BK
GLP-1 (total)	Multi-Species	4.1–1000 pM	1.0 pM	20–50 µL	EZGLP1T-36K	EZGLP1T-36BK
GLP-2	Multi-Species	1–64 ng/mL	0.3 ng/mL	50 µL	EZGLP2-37K	
Glucagon Δ	Human, Mouse, Rat	0.02–2 ng/mL	0.003 ng/mL	150–300 µL	EZGLU-30K	EZGLU-30BK
Growth Hormone (GH)	Mouse, Rat	0.7–50 ng/mL	0.07 ng/mL	10 µL	EZRMGH-45K	EZRMGH-45BK
IL-6 <b>NEW</b>	Human	1.17–150 pg/mL	1.17 pg/mL	50 µL	EZIL6-98K	EZIL6-98K10PK
IL-8 <b>NEW</b>	Human	0.82–200 pg/mL	0.8 pg/mL	50 µL	EZHIL8-100K	EZHIL8-100K10PK
Insulin	Human	2–200 µU/mL	1.0 µU/mL	20 µL	EZHI-14K	EZHI-14BK
Insulin	Mouse, Rat	0.2–10 ng/mL	0.1 ng/mL	10 µL	EZRMI-13K	EZRMI-13BK
Leptin	Canine	0.78–50 ng/mL	0.21 ng/mL	20 µL	EZCL-31K	
Leptin	Mouse	0.2–30 ng/mL	0.05 ng/mL	10 µL	EZML-82K	EZML-82BK
Leptin	Rat	0.2–30 ng/mL	0.08 ng/mL	10 µL	EZRL-83K	EZRL-83BK
Leptin “Dual Range”	Human	0.5–100 ng/mL	0.2 ng/mL	25 µL	EZHL-80SK	EZHL-80BK
MCP-1 <b>NEW</b>	Human	7.18–1000 pg/mL	7.18 pg/mL	10 µL (1:5 dilution)	EZMCP1-99KRM	EZMCP1-99K10PKRM
Procollagen Type IIA N-Propeptide (PIIANP)	Human	lot dependent	30.0 ng/mL	5 µL	EZPIIANP-53K	
Proinsulin (total)	Human	2–200 pM	0.5 pM	20 µL	EZHPI-15K	EZHPI-15BK
PYY (total)	Human	10–2000 pg/mL	6.5 pg/mL	20 µL	EZHPLYT66K	
Resistin	Human	0.16–5 ng/mL	0.02 ng/mL	20 µL	EZHR-95K	EZHR-95BK
SAA-3	Mouse	0.078–5 µg/mL	0.078 µg/mL	10 µL	EZMSAA3-12K	
TNF-α <b>NEW</b>	Human	1.65–400 pg/mL	1.65 pg/mL	50 µL	EZHTNFA-150K	EZHTNFA-150K10PK

\* Bulk packaging available on select kits — more environmentally friendly and saves space (10 kit equivalent)

•• Preferred assay for measuring GLP-1 (active)

Δ Chemiluminescent assay

# Millipore® Brand ELISAs & RIAs

Neuroscience ELISAs	Species	Standard Curve Range	Sensitivity	Sample Volume	Cat. No.
Amyloid beta 1-40	Human	16–500 pg/mL	4 pg/mL	50 µL	EZHS40
Amyloid beta 1-42	Human	16–500 pg/mL	5 pg/mL	50 µL	EZHS42
Amyloid beta, Set	Human	Contains 1 each of EZHS40 and EZHS42			EZHS-SET
Amyloid beta (Brain) 1-40	Human	16–500 pg/mL	4 pg/mL	50 µL	EZBRAIN40
Amyloid beta (Brain) 1-42	Human	16–500 pg/mL	5 pg/mL	50 µL	EZBRAIN42
Amyloid beta (Brain), Set	Human	Contains 1 each of EZBRAIN40 and EZBRAIN42			EZBRAIN-SET
BDNF (Brain-Derived Neurotrophic Factor)	Human, Rat	7.8–500 pg/mL	7.8 pg/mL	50 µL	CYT306
GFAP (Glial Fibrillary Acidic Protein)	Human, Mouse, Rat	1.5–100 ng/mL	1.5 ng/mL	100 µL	NS830
NPY (Neuropeptide Y)	Human	5–1,000 pg/mL	2 pg/mL	50 µL	EZHNPY-25K
NPY (Neuropeptide Y)	Mouse, Rat	0.01–2 ng/mL	0.004 ng/mL	20 µL	EZRMNPY-27K
PEDF (Pigment Epithelium-Derived Factor)	Human	0.9–62.5 ng/mL	0.9 ng/mL	50 µL	CYT420
Phosphorylated Neurofilament, (pNF-H) Sandwich	Multi-Species	0.0293–15 ng/mL	0.0585 ng/mL	1–10 µL	NS170
S100B	Human	2.7–2,000 pg/mL	1.3 pg/mL	50 µL	EZHS100B-33K
RIAs	Species	Standard Curve Range	Sensitivity	Sample Volume	Cat. No.
Adiponectin	Human	lot dependent	1 ng/mL	5 µL	HADP-61HK
C-Peptide	Canine	0.156–20 ng/mL	0.15 ng/mL	50 µL	CCP-24HK
C-Peptide	Human	0.1–5 ng/mL	0.1 ng/mL	50 µL	HCP-20K
Ghrelin (active)	Human	lot dependent	7.8 pg/mL	50 µL	GHRA-88HK
Ghrelin (total)	Human	lot dependent	93 pg/mL	50 µL	GHRT-89HK
GLP-1 (active)	Multi-Species	10–500 pM	3 pM	300 µL	GLP1A-35HK
GLP-1 (total)	Multi-Species	10–1,000 pM	3 pM	300 µL	GLP1T-36HK
Glucagon	Multi-Species	20–400 pg/mL	20 pg/mL	50 µL	GL-32K
Insulin	Porcine	2–200 µU/mL	2 µU/mL	50 µL	PI-12K
Insulin	Rat	0.1–10 ng/mL	0.1 ng/mL	50 µL	RI-13K
Insulin (sensitive)	Rat	0.02–1 ng/mL	0.02 ng/mL	50 µL	SRI-13K
Insulin Specific	Human	2–200 µU/mL	2 µU/mL	50 µL	HI-14K
Leptin	Human	0.5–100 ng/mL	0.5 ng/mL	50–100 µL	HL-81K
Leptin	Multi-Species	1–50 ng/mL	1 ng/mL	50 µL	XL-85K
Proinsulin	Human	2–100 pM	2 pM	100–200 µL	HPI-15K
PYY (3-36)	Human	lot dependent	20 pg/mL	<100 µL	PYY-67HK
PYY (total)	Human	lot dependent	10 pg/mL	<100 µL	PYYT-66HK

## Sigma-Aldrich® Brand ELISAs

We offer a portfolio of >1,300 ELISAs and EIAs, covering a diverse range of species, research areas, and sample types. Find your ELISA at [SigmaAldrich.com/elisa](https://www.sigmaaldrich.com/elisa)

# Make the Most of Your Immunoassays

## Ancillary Equipment to Optimize Your Assays

We offer washers and readers from Agilent (BioTek® instruments) to support all of our platforms.

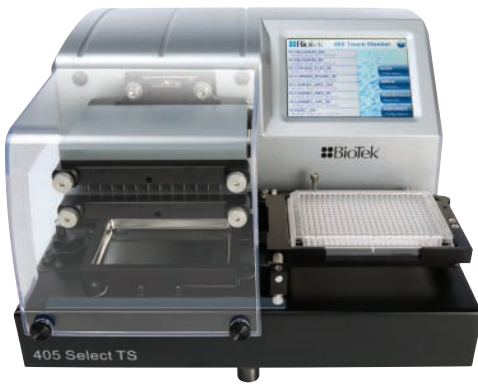
### BioTek® 405™ TSUVS Magnetic 96-Well Washer for SMC® Assays



This fully automated system is designed to quickly wash an entire plate through biomagnetic separation, washing, and vacuum filtration. The system comes specifically optimized for use with SMC® assays with the inclusion of a specially designed magnetic plate and customized pre-programmed plate washing protocols. The 405™ TSUVS model offers an easy-to-use and glove touchable screen.

Description	Cat. No.
BioTek® 405™ TSUVS Magnetic 96-Well Washer Complete with Touch Screen and Ultrasonic Cleaning for SMC® Assays	95-0004-05
SMC® Plate Washer Evaluation Kit	03-0165-00

### BioTek® Washing & Dispensing Solutions for MILLIPLEX® Assays



The MultiFlo™ FX dispenser allows users to dispense kit reagents, ensuring excellent assay reproducibility.

#### BioTek® washer advantages:

- Fast and hands-free full plate washing
- This washer includes an intuitive touch-screen user interface and the Ultrasonic Advantage™ cleaning program for easy washing of the toughest sample types

Description	Cat. No.
BioTek® 405™ TS Magnetic 96-Well Washer Complete with Touch Screen and Ultrasonic Cleaning	40-092AB

### Other Washers and ELISA Readers

Description	Cat. No.
BioTek® 50™ Magnetic 96-Well Strip Washer	40-301
BioTek® 800™ TS Absorbance Reader with Gen5™ Software	40-006
Handheld Magnetic Bead Washer Separator Block for 96-Well Flat Bottom or Conical Well Plates	40-285

### Enhance Your Workflows

Explore BioTek® washers for our platforms at [SigmaAldrich.com/smc-washer](http://SigmaAldrich.com/smc-washer) and [SigmaAldrich.com/milliplex-washer](http://SigmaAldrich.com/milliplex-washer)

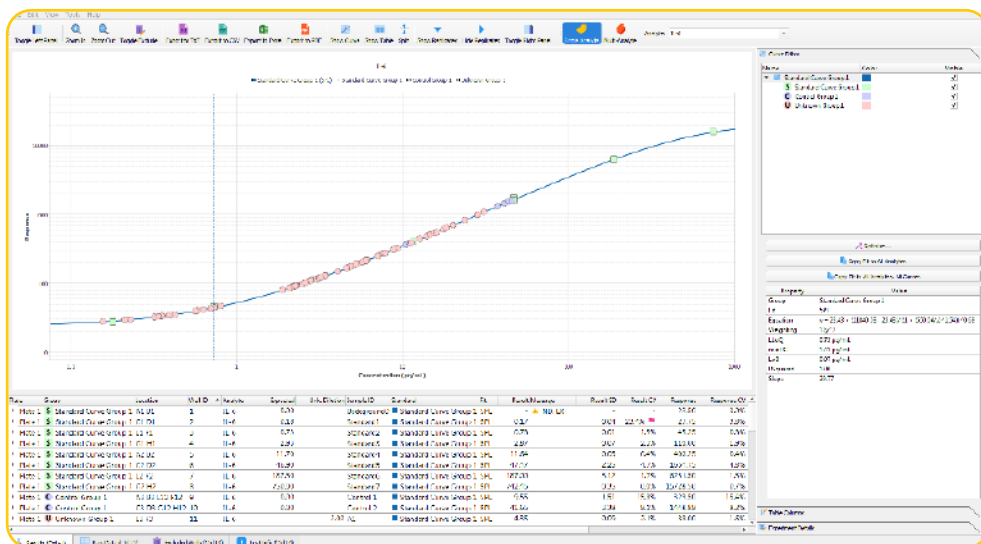
# Belysa® Immunoassay Curve Fitting Software

(Cat. No. 40-122)

Our newest proprietary software package for curve fitting, examination, and comparison of data acquired from a variety of immunoassay platforms. Belysa® software has been designed to provide an easy-to-use tool to optimize curve fit and confirm the integrity of data within a plate or across plates from multiple runs.

## Key Features and Benefits

- User-friendly interface
- Automatic and manual curve fitting (4pl, 5pl, linear, competitive, cubic spline)
- Curve comparison tools
- Rules-based data flagging
- Suitable for use with RUO Luminex® instruments, SMCxPRO® platform, and ELISA .csv acquisition files
- Windows 10 and macOS (beta) compatible



**Example 1.** Belysa® standard curve and data analysis: IL-6 MILLIPLEX® assay from a Luminex® xPONENT®.csv output file.

As shown in Example 1, a .csv output file is simply drag-and-dropped into the Belysa® browser for instant data review.

Once the user selects the curve fit model, either automatically by using the wizard, or manually, the data are displayed:

- Sample concentrations
- Recovery of standards
- Equation of line
- Limit of Detection (LOD)
- Lower Limit of Quantitation (LLOQ)
- Minimum Detectable Dose (MD)
- Data is exportable to: Excel, .csv, .txt, and .pdf



## Data Autoflagging

Message	Result SD	Result CV	Response	Response CV
▲ EXT, ND	-	-	15.75	2.2%
▲ BLOQ	0.03	3.6%	35.50	2.0%
▲ BLOQ	0.08	10.4%	32.75	5.4%
▲ BLOQ	0.13	16.4%	33.00	8.6%
▲ BLOQ	0.03	6.0%	27.50	2.6%
▲ BLOQ	0.03	3.8%	34.50	2.0%
▲ BLOQ	0.03	4.2%	32.50	2.2%
▲ BLOQ	0.03	3.4%	36.50	1.9%
▲ BLOQ	0.18	25.9%	30.75	12.6%
▲ BLOQ	0.00	0.0%	23.00	0.0%
▲ BLOQ	0.05	13.3%	23.75	4.5%
▲ BLOQ	0.06	27.1%	21.00	6.7%
▲ BLOQ	0.03	10.5%	22.50	3.1%
▲ BLOQ	0.10	10.7%	35.50	6.0%

As shown in Example 2, Belysa® software annotates data for hard rules such as below the limit of quantitation (BLOQ) using a yellow triangle. The user may define parameters such as acceptable %CV or bead counts which creates a pink flag next to the raw data that does not meet the user's acceptance criteria. Then, a decision can be made to exclude points which will then be recorded if required for review.

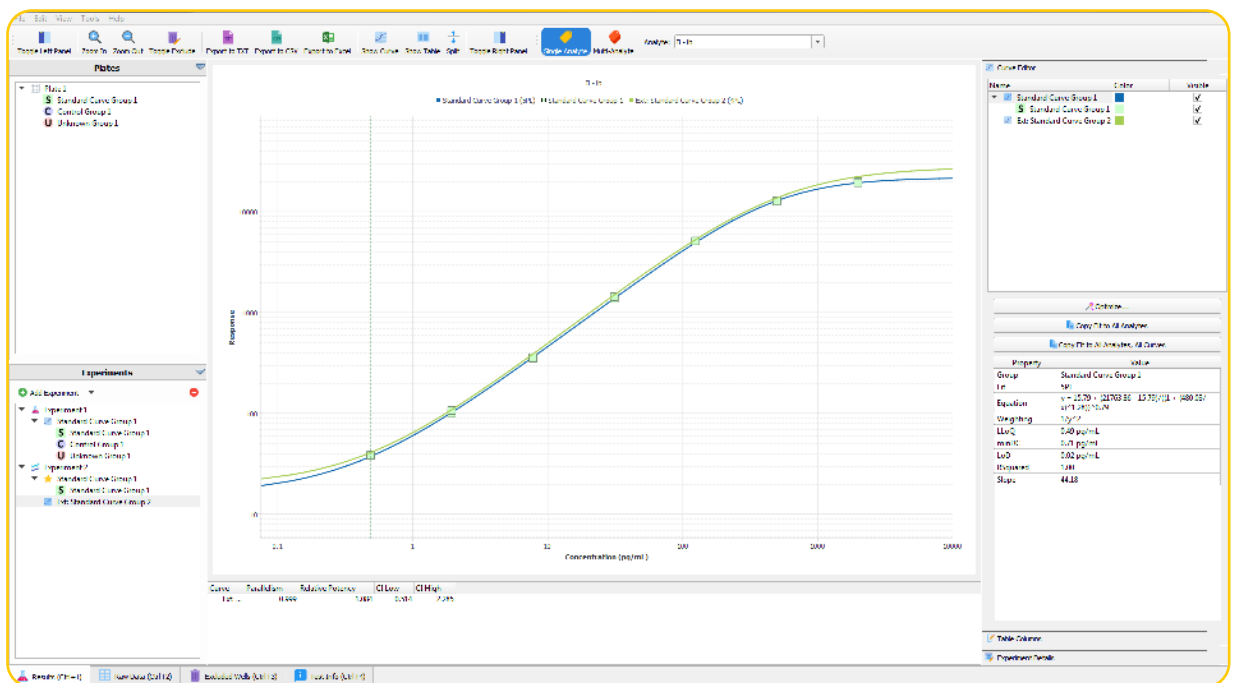
Example 2. Belysa® data annotation: below LLOQ (yellow triangle), %CV (pink flags).

## Belysa® Software Curve Comparison Tool

Comparing standard curves can provide crucial information on the reproducibility of an assay over multiple plates within specific runs or over the course of a longitudinal study. As shown in Example 3, Belysa® software provides a curve comparison tool for multiple curves imported from previously saved Belysa® output files. The first curve is used as a reference against which each subsequent curve is compared.

Comparison tests across multiple runs:

- Parallelism
- Relative potency of standards



Example 3. Comparison of two standard curves in Belysa® software from two lots of the same MILLIPLEX® assay run 1 year apart.

# CADI: Custom Assay Development & Innovation

Accelerate your research with custom SMC®, MILLIPLEX®, and ELISA assays designed for your specific biomarker needs.

We understand you don't always have the time, resources, or expertise to develop your own assay for your protein of interest. Rely on our vast development expertise and our ability to produce high-quality, reproducible immunoassays to help you accelerate your program from discovery research into clinical trials with a custom-designed solution.



**Get started today!**  
View a complete listing of services at [SigmaAldrich.com/customassay](https://SigmaAldrich.com/customassay)

## Fit-For-Purpose Custom Assay Project Workflow

Develop a new SMC®, MILLIPLEX®, or ELISA assay which is fit for your purpose. We follow a milestone-based approach to generate an assay that quantifies your exact protein or proteins of interest. You will receive updates and data reviews during each milestone, offering you peace of mind that your project is on schedule and meeting specifications.



## Example Custom Assay Offerings

Cat. No.	Description	Description
SPRCUS1014	Custom Human 384-Well Circulating Cancer Biomarker Panel 3 8-Plex	H (S/P, Sup, Lys)
SPRCUS1016	Custom Human 384-Well Angiogenesis Panel 2 20-Plex	H (S/P, Sup, Lys)
SPRCUS1042	Custom Human 384-Well Immuno-Oncology Checkpoint Protein Panel 17-Plex	H (S/P, Sup)

# Custom MILLIPLEX® Analytes

Analyte	Species (Sample Types)
α-1 Antichymotrypsin	H (S/P)
α-2 Antiplasmin	H (S/P)
AGP (α 1-Acid Glycoprotein)	H (U)
Angiopoetin-1	H (S/P, T)
Anti-Cardiolipin antibody IgA	H (S/P)
Anti-EBV VCA IgG	H (S/P)
Anti-Phosphatidylserine IgG, IgM	H (S/P)
Antithrombin iii	H (S/P, Sup, Lys)
Apolipoprotein A-IV	H (S/P)
Arginase 1	M (S/P)
AXL (s)	M, R (S/P)
BAD (Ser112)	H, M (Lys)**
BCMA (B-cell Maturation Antigen)	H (S/P)
BMP-9	M, R (S/P)
BRD4	H, M, R (Lys)
Caspase 3 (Active)	H, M (Lys)**
CBP	H, M, R (Lys)
CD13 Aminopeptidase N	H (S/P)
CD163 (s)	H (S/P)
Ceruloplasmin	H (U)
Cleaved PARP (total)	H (Lys)**
CSTB (Cystatin B)	H (S/P)
Elafin	H (S/P)
ERK/MAPK 1/2 (Thr185/Tyr187)	H, M, R (Lys)**
ERK/MAPK 1/2 (total)	H, M, R (Lys)**
Extracellular Matrix Protein (ECM1)	H (S/P, Sup, Lys)
FGF-23	M (S/P, Sup)
Fibronectin	H (S/P)
G3BP (Galectin 3 Binding Protein)	H (U)
Gas-6	H, M, R (S/P)
Granzyme A	M (S/P)
Gremlin	M, R (S/P)
GRP78	H (S/P)
HGFR/cMET	M, R (S/P)
I-FABP	H (S/P)
IGF-1	M, R (S/P)

Analyte	Species (Sample Types)
IL-18	M, R (S/P)
IL-33R/ST2 (Suppressor of Tumorigenicity 2)	H (S/P)
Insulin	F (S/P)
Involucrin	H (S/P)
IRS1 (Ser133)	H, M, R (S/P)
IRS1 (total)	H, M, R (S/P)
Keratin-1,10	H (S/P)
Keratin-6	H (S/P)
LPGDS (Lipocalin like prostaglandin D synthase)	H (U)
Lysozyme C	H (S/P)
MIP-1γ	M, R (S/P)
MR-proADM	H (S/P)
Osteoprotegerin (OPG)	M (S/P, Sup)
p300	H, M, R (Lys)
p38/SAPK2A/B (Thr180/Tyr182)	H, M, R (Lys)**
p38/SAPK2A/B (total)	H, M, R (Lys)**
Periostin	M, R (S/P)
PODXL	M, R (S/P)
Prealbumin (Transthyretin)	H (S/P)
Procalcitonin	H, M, R (S/P)
Prostaglandin D Synthase (lipocalin-type)	H (S/P, CSF, Sup)
Sclerostin (SOST)	M (S/P, Sup)
Semaphorin 3A	H (Sup)
STAT1 (total)	H, M (Lys)**
Tenascin C	M, R (S/P)
Thyroxine Binding Globulin	H (S/P)
TRAIL	M, R (S/P)
Transferrin	H (U)
Vasopressin	M, R (P)
VE Cadherin/Cadherin 5	H (S/P)
Vitamin D Binding Protein	H (S/P, Sup, Lys)
Vitronectin	M, R (S/P)
Wnt-3a	H (S/P, Sup, Lys)
Zinc-α-2 Glycoprotein	H (S/P)

## Species Key

**H** Human  
**M** Mouse  
**R** Rat  
**F** Feline

## Sample Type Key

**CSF** Cerebral Spinal Fluid  
**Lys** Cell/Tissue Lysates  
**Mul** Multiple Types  
**S/P** Serum/Plasma  
**Sup** Cell/Tissue Culture Supernatants  
**T** Tears  
**U** Urine

## Notations

**s** Soluble analyte  
**\*\*** No standard/QC; levels reported as MFIs (Median Fluorescence Intensities)



# Beyond the Assay Development Workflow

In addition to our assay development services, we can support your other custom assay needs.

## Our additional capabilities include:

### Switching Formats

- MILLIPLEX® Assays: 96-well to 384-well
- SMC® Assays: bead-based to plate-based
- Converting MILLIPLEX® assays to SMC® assay platform

### Sample Testing

- Prototype sample testing
- Proprietary kit sample testing (SMC® assays only)
- SMC® immunoassay kit testing (SMC® assays only)

### Biotherapeutic Assay Development

- Pharmacokinetics
- Pharmacodynamics
- Immunogenicity

### SMCxPlore™ Proof of Concept Sample Testing:

Use our SMCxPlore™ proof of concept sample testing service to “explore” SMC® technology with your analyte of interest or critical samples. Test up to 30 of your critical samples using one of our highly verified SMC® immunoassays.





# Quality in Every Kit

Assay performance data is included in every protocol, so you can discover with confidence

## Rigorous Assay Development

### Specificity

- Antibody specificity is tested to ensure negligible cross-reactivity in the tested sample types
- Assay specificity is ensured by confirming consistent performance in singleplex and multiplex formats

### Method Comparisons

- We test our kits against in-house kits and kits from other vendors when available, ensuring the highest performing kits

### Selectivity

- Assay buffers and bead diluents are optimized to enhance antibody binding to only those analytes of interest in samples

### Detection and Sensitivity

- The assay range and minimum detectible concentrations (minDCs or LLOQ) for each analyte is published in our protocols, and is based on actual samples

### Performance in a Sample Matrix

- Assays are verified for the sample type noted in the protocol; for serum/plasma sample kits, we provide an optimized serum matrix to mimic the environment of the sample, normalizing assay performance

We'll help you choose the right platform and assays to meet your needs today, and we'll partner with you to meet those needs in the future — without compromising quality.

## Reproducible Results You Can Trust

### Stability

- All kits are rigorously tested for shipping stability to determine impact on each analyte
- Sample stability is examined at a range of temperatures, and by freeze/thaw

### Precision and Accuracy

- Precision of control standards are typically within 15% CV for intra-assay and 20% CV for inter-assay
- Spike recovery in sample is performed for each analyte at three concentrations; accuracy is normally within  $\pm 30\%$

### Linearity of Dilution

- Diluted sample results must be directly proportional to the concentration of analyte in the sample, typically within  $\pm 30\%$

### Lot-to-Lot Consistency

- A "gold standard" calibrator is defined during assay development and used as a reference for all future production lots



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