

# Analyte Quarterly

Vol. 1 2022

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
  - MILLIPLEX® Assays
  - ELISAs
  - SMC® Technology



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
	Accurately measure up to 48 proteins in a sample	Explore previously undetectable proteins	Trusted standards for protein quantitation
Single/Multiplex	Multiplex	Singleplex	Singleplex
Sensitivity	Up to pg/mL	Up to fg/mL	Up 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® or any Luminex® assay	SMC® assay	Any ELISA or RIA
Instrument	Luminex®: xMAP® INTELLIFLEX, FLEXMAP 3D®, Luminex® 200™ Systems	SMCxPRO® System	Any ELISA reader, or gamma counter (for RIA)

## New Immunoassay Products

### NEW! MILLIPLEX® and SMC® Kits

Description	Species	Cat. No.
<b>MILLIPLEX® Panels</b>		
MILLIPLEX® Complement Expanded Panel 1	Human	HCMPEX1-19K
<b>SMC® Kits</b>		
SMC® Human IgE High Sensitivity Immunoassay Kit	Human	03-0201-00
SMC® Human SNAP-25 High Sensitivity Immunoassay Kit	Human	03-0206-00
SMC® Human TDP-43 High Sensitivity Immunoassay Kit	Human	03-0205-00

### Coming Soon

Description	Species	Cat. No.
<b>MILLIPLEX® Panels</b>		
MILLIPLEX® Cytokine Autoantibody Expanded Panel IgG	Human	Coming Soon!
MILLIPLEX® Cytokine Autoantibody Panel IgA	Human	Coming Soon!
MILLIPLEX® Cytokine Autoantibody Panel IgM	Human	Coming Soon!
<b>SMC® Kits</b>		
SMC® Human NF-L High Sensitivity Immunoassay Kit	Human	Coming Soon!
<b>ELISA Kits</b>		
Conferma™ TNFα ELISA	Human	Coming Soon!



### Explore the xMAP® INTELLIFLEX System

Learn more and request information at [SigmaAldrich.com/intelliflex](https://SigmaAldrich.com/intelliflex)

### Design and purchase your own kit

Search our MILLIPLEX® analyte offerings and order panels:

For customers in the United States, Canada, Denmark, Finland, Italy, Norway, Portugal, Spain, United Kingdom start your search here: [SigmaAldrich.com/milliplex-order](https://SigmaAldrich.com/milliplex-order)

For customers in all other countries start your search here: [MerckMillipore.com/milliplex](https://MerckMillipore.com/milliplex)

## Software Update: Belysa® Immunoassay Curve Fitting Software Update (Version 1.2)

We are pleased to announce that a new update for our Belysa® Immunoassay Curve Fitting Software is now available. The software enables an end-user to optimize standard curves and evaluate experimental data for reproducibility from a variety of immunoassay platforms including Luminex® (RUO) and SMCxPRO® instruments, plus ELISA readers.

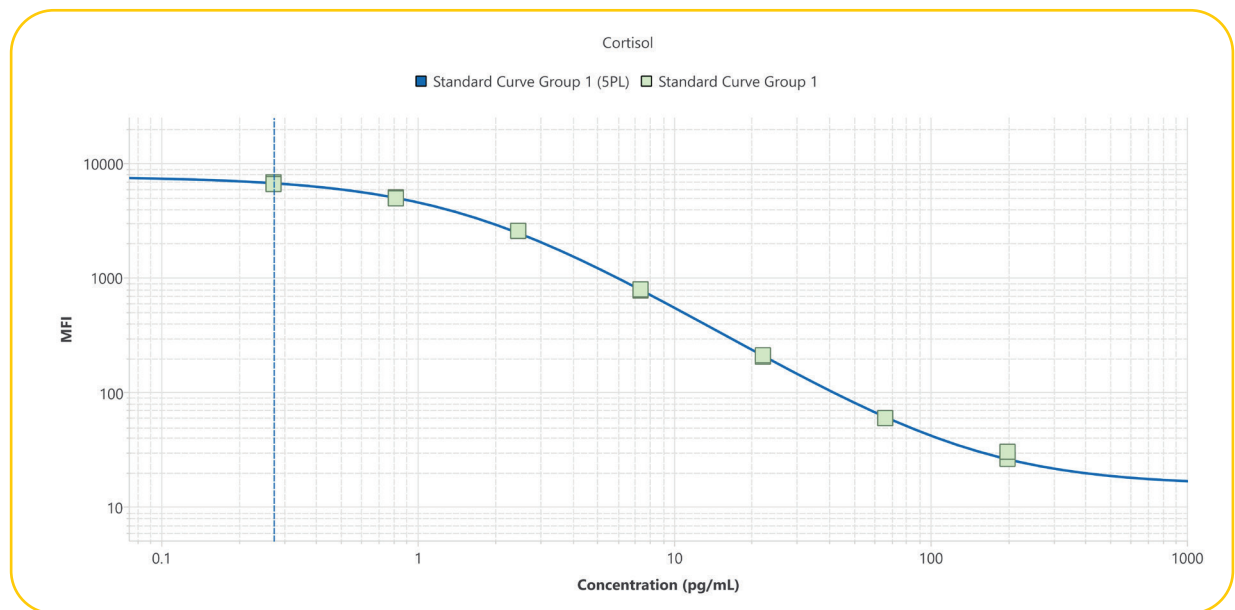
Two key features of the latest update were added from user requests:

- Competitive assay curve fitting
- LOD coefficient modification

This update is free to download for all existing users from [SigmaAldrich.com/belysa-updates](https://SigmaAldrich.com/belysa-updates)

### Competitive Assay Curve Fitting

Competitive assays present the inverse of a standard sandwich assay with the highest detected signal (e.g., O.D. or MFI) being associated with the lowest value on the curve (e.g., the blank). Belysa® software will now plot this with the same ease as users experience with more traditional quantitative assay formats (4pl, 5pl, linear curves, etc.) including metrics such as LOD, LLOQ, and the calculation of parallelism/relative potency.



Competitive assay curve fitting looking at cortisol levels using a MILLIPLEX® multiplex assay (Cat. No. MSHMAG-54K).

### MILLIPLEX® Assays Using Competitive Curves

This new curve fitting model will support easier analysis of some MILLIPLEX® assays including Cat. Nos.:

- MSHMAG-21K
- SKINMAG-50K
- HNP MAG-35K
- HNC SMAG-35K
- RMNPMAG-83K
- RKTX1MAG-37K
- RSHMAG-69K
- RTHYMAG-30K

### LOD Modification

The LOD of assays was previously calculated using a fixed Standard Deviation coefficient. Users indicated that they may wish to alter this value depending on platform, curve, or assay so this feature has been enabled.

The update will contain further updates and bug fixes available in the V1.2 release notes. Learn more about the software at [SigmaAldrich.com/belysa](https://SigmaAldrich.com/belysa)

# SMC<sup>®</sup> Technology Highlights

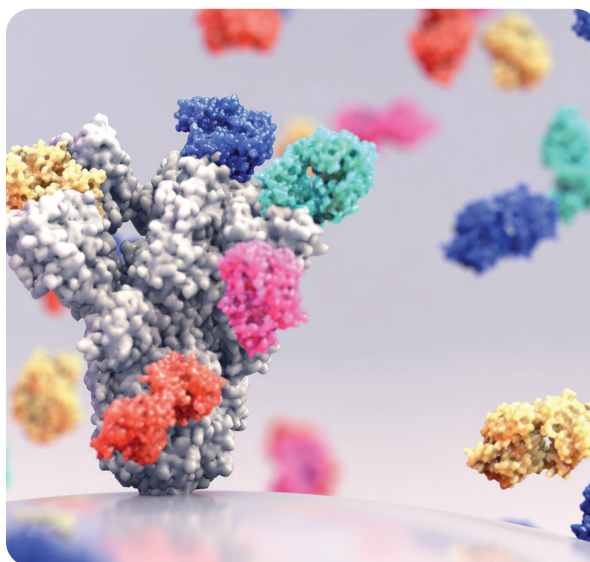
Accurately measure circulating immunoglobulins with confidence

## New SMC<sup>®</sup> High Sensitivity Human IgM and IgE Kits

The study of immunoglobulins continues to be critical, from understanding desirable host immune responses to pathogens, to studying the presence and implications of unwanted humoral immunity from treatment with therapeutic drugs. Studying IgM and IgE immunoglobulin subclasses is often a focus of this research because they are indicators of early antibody response and allergic/hypersensitivity reactions, respectively.

While accurate measurement of these molecules is a crucial part of any successful study involving induced antibody responses, this can be a challenge on many traditional immunoassay platforms due to sensitivity and/or matrix interference concerns. We have harnessed the power of the ultrasensitive SMC<sup>®</sup> technology to introduce our new plate-based human IgM and IgE kits, both of which are rigorously developed and stringently verified for plasma and serum samples.

Check out the products below and explore how you can apply this unprecedented assay performance to your next humoral immunity study.



Description	Cat. No.
SMC <sup>®</sup> Human IgE High Sensitivity Immunoassay Kit	03-0201-00
SMC <sup>®</sup> Human IgM High Sensitivity Immunoassay Kit	03-0204-00



# MILLIPLEX® New Product Spotlight

## Enhance your complement pathway studies with the new MILLIPLEX® Human Complement Expanded Panel 1

The new MILLIPLEX® Human Complement Expanded Panel 1 is a 9-plex panel that offers simultaneous detection of complement components, including the newly added Properdin and C9, across the three complement pathways. Along with the MILLIPLEX® Human Complement Panel 2, a total of 15 complement components can be easily detected in a small sample volume. These panels offer fast evaluation of general complement activation, specific pathway activation, regulatory proteins, and inflammatory anaphylatoxins.

Get more details on [MILLIPLEX® Human Complement Expanded Panel 1](#) (Cat. No. HCMPEX1-19K).

### Human Complement Expanded Panel 1

**NEW**

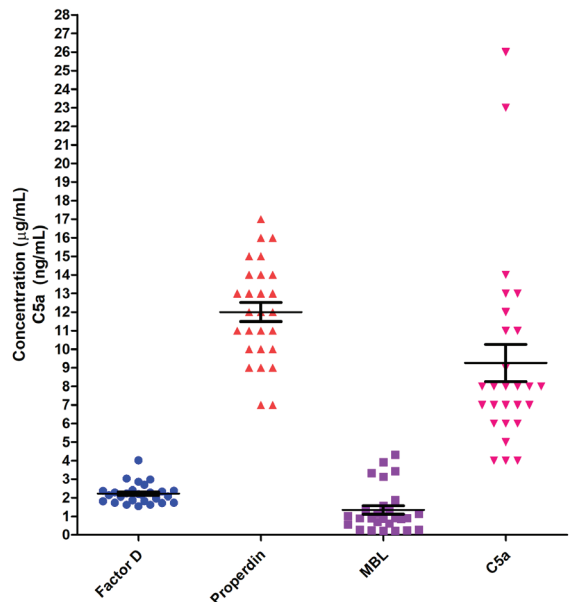
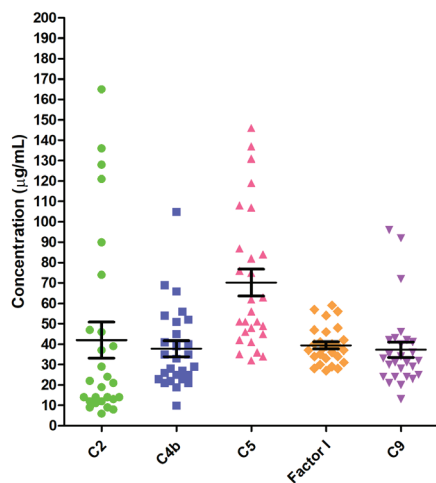
● (Cat. No. HCMPEX1-19K)

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

### Human Complement Panel 2

● (Cat. No. HCMP2MAG-19K)

C1q	C4
C3	Factor B
C3b	Factor H



Complement concentrations from healthy donor EDTA plasma samples (n=27) are shown measured in MILLIPLEX® Human Complement Expanded Panel 1 (Cat. No. HCMPEX1-19K).

## MILLIPLEX® New Product Spotlight

### Introducing the largest available multiplex assay for quantitating immune checkpoint proteins in mouse samples



Save time and precious sample volume with the new MILLIPLEX® Mouse Immuno-Oncology Checkpoint Protein Panel 1. Choose any combination of 28 immune checkpoint proteins for quantitation in just 25  $\mu$ L of sample. **See page 25** for the full list of analytes.

#### Benefits of MILLIPLEX® Mouse Immuno-Oncology Checkpoint Protein Panel 1:

- **Flexible:** Choose any combination of analytes, customize your premix, or select a 28-plex premixed or bulk premixed kit
- **Verified:** Fully verified for use with mouse serum, plasma, cell or tissue culture supernatants or lysates
- **User-Friendly:** Reduce variability with ready-to-use reagents and a straightforward protocol

Discover more at [SigmaAldrich.com/mouseimmunecology](https://SigmaAldrich.com/mouseimmunecology)

## Next Generation Multiplexing Platform

The Luminex® xMAP® INTELLIFLEX system is a compact, flow-based, multiplex platform that simplifies your workflow by combining the reliable performance of xMAP® technology with advanced features to elevate your assay performance and empower assay development innovation.

#### Features of the xMAP® INTELLIFLEX System:

- **Wide Dynamic Range:** Avoid repeat testing due to out-of-range values with the widest dynamic range of any xMAP® platform
- **Compact Footprint:** Reduce lab bench requirements with a compact footprint that features an embedded PC and a touchscreen user interface
- **User-Friendly and Flexible Software:** Easy-to-use software allows you to optimize workflows, gather performance insights, and export data for analysis
- **Compatibility:** All existing MILLIPLEX® assays and Belysa® curve fitting software are compatible with xMAP® INTELLIFLEX systems
- **Dual Reporter Functionality:** Now get more data from each target with the new second reporter channel that allows you to save on time and precious sample volume

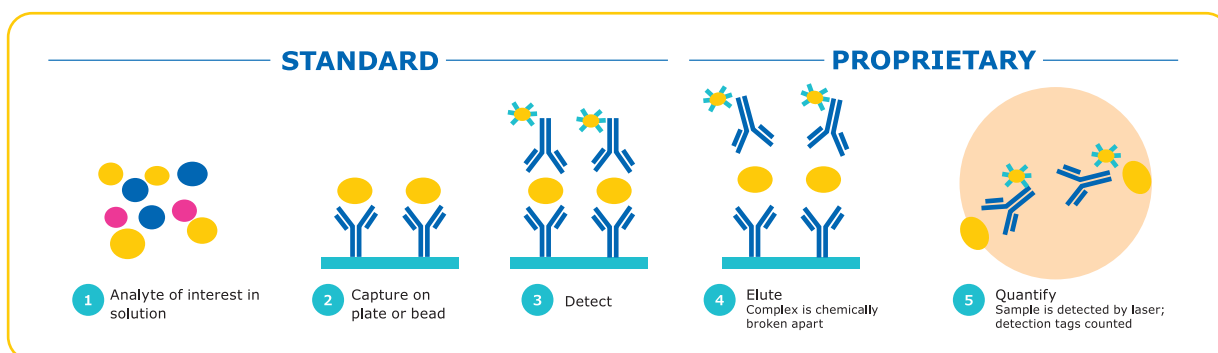
Explore more at [SigmaAldrich.com/intelliflex](https://SigmaAldrich.com/intelliflex)



# 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://www.sigmaaldrich.com/smc-learn)



# SMC® Immunoassay Kits

Analyte	LLOQ (pg/mL) <sup>1</sup>	Median Endogenous (pg/mL) <sup>2</sup>	Species <sup>3</sup>	Sample Type <sup>4</sup>	Sample volume (µL)	Cat. No.
Phospho-α-Synuclein(Ser129)	0.1	P: 2.74; S: 1.81; C: 0.64	H	P, S, C	20, 20, 50	03-0188-00
Total-α-Synuclein	1.95	P: 1885; S: 1240; C: 233	H	P, S, C	0.5, 0.5, 10	03-0196-00
Amyloid beta 1-40	5.86	Normal CSF: 1366; P: 152	H, M, R	C, P	5, 25	03-0145-00
Amyloid beta 1-42	0.98	Normal CSF: 192; P: 15	H, M, R	C, P	5, 25	03-0146-00
BDNF	0.04	P: 783; S: 410; CSF: 0.13	H	C, P, S	100, 1, 1	03-0171-00
cTnI	0.69	P: 3.04; S: 3.02	H, Cy, R, C, GP	P, S	100	03-0154-00
GFAP	0.12	P: 1.91; S: 1.93; C: 42.57	H	C, P, S	3.3, 100, 100	03-0203-00
Glucagon	0.78	44	H, M, R	P	10	03-0153-00
IFN-α2	0.031	P: 0.08; S: 0.08	H	P, S	100	03-0186-00
IFN-β1	0.15	P: 0.35; S: 0.64	H	P, S	50	03-0191-00
IFN-γ	0.03	P: 1.4; S: 1.4	H	P, S	25	03-0181-00
IgE <sup>5</sup> <b>NEW</b>	31.00	P: 3.38 µg/mL, S: 2.79 µg/mL	H	P, S	<1	03-0201-00
IgM <sup>5</sup>	206.00	P: 0.64 mg/mL, S: 0.79 mg/mL	H	P, S	<1	03-0204-00
IL-1α2	0.12	P: 0.09; S: 0.10	H	P, S	100	03-0167-00
IL-1β	0.20	P: 0.11; S: 0.12	H	P, S	100	03-0160-00
IL-2 (new version)	0.09	0.21	H	P, S	100	03-0195-00
IL-22	0.10	P: 1.51; S: 1.52	H	P, S	25	03-0162-00
IL-23	0.10	P: 0.65; S: 0.46	H	P, S	100	03-0157-00
IL-4	0.04	P: 0.18; S: 0.18	H	P, S	100	03-0161-00
IL-5	0.04	P: 0.37; S: 0.30	H	P, S	100	03-0168-00
IL-6	0.08	P: 0.70; S: 0.69	H	P, S	75	03-0155-00
IL-10	0.10	P: 0.90; S: 0.89	H	P, S	100	03-0176-00
IL-12p70	0.05	P: 0.29; S: 0.28	H	P, S	100	03-0182-00
IL-13	0.04	P: 0.37; S: 0.33	H	P, S	100	03-0156-00
IL-17A/F Heterodimer	1.17	P: 1.36; S: 3.20	H	P, S	50	03-0177-00
IL-17A	0.07	P: 0.31; S: 0.30	H	P, S	50	03-0159-00
IL-17F	0.20	P: 1.10; S: 1.18	H	P, S	50	03-0164-00
IL-18	0.09	P: 138; S: 145	H	P, S	10	03-0190-00
MCP-1	0.15	P: 682; S: 1021	H	P, S	1.56	03-0187-00
NPTX2	0.58	P: 8268; S: 8161; C: 1677	H	P, S, C	0.1, 0.1, 0.3	03-0199-00
SNAP-25 <b>NEW</b>	0.26	P: 1.74; S: 1.44; C: 1.08	H	P, S, C	100	03-0206-00
TDP-43 <b>NEW</b>	5.21	P: 103.15; S: 94.99; C: 4.33	H	P, S, C	12.5, 12.5, 100	03-0205-00
Phospho-Tau(Thr181)	0.94	P: 3.4; S: 2.0; C: 21	H	P, S, C	50, 100, 25	03-0184-00
Total Tau	2.34	P: 27.1; S: 7.0; C: 88.91	H	P, S, C	50, 100, 25	03-0185-00
TNFα	0.20	P: 0.85; S: 0.78	H	P, S	100	03-0163-00
UCHL1	2.60	P: 22.06; S: 20.49; C: 413	H	P, S, C	25, 25, 5	03-0183-00
VEGF-A	0.20	P: 48; S: 50	H	P, S	25	03-0180-00
SARS-CoV-2 RBD IgG	NA <sup>6</sup>	NA <sup>6</sup>	H	P, S	2	03-0193-00
SARS-CoV-2 S1 IgA	NA <sup>6</sup>	NA <sup>6</sup>	H	P, S	2	03-0197-00

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

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

<sup>2</sup> Median Endogenous: Minimum of 10 samples from individual donors assessed for ability to quantify baseline biomarker values

<sup>3</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>4</sup> Optimized for use in sample type(s) listed. Key: P=Plasma; S=Serum; L=Lysate; U=Urine; C=Cerebrospinal Fluid (CSF)

<sup>5</sup> Plate-based assay

<sup>6</sup> Qualitative assay

SMC® PLATFORM

SINGLE MOLECULE COUNTING (SMC®) ASSAYS

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.

## High-Performing Microplates for Use on the SMCxPRO<sup>®</sup> System



We are the exclusive distributor of the High-Performance 384-Well Microplate, which is required for use on the SMCxPRO<sup>®</sup> platform. Enhanced detection and stability of your biological materials are critical for generating consistent, high-quality data. Containing a flat-bottom design with a proprietary high transmittance window, these plates are optimized for imaging and designed to optimally perform on the SMCxPRO<sup>®</sup> system. They are also available in two convenient package sizes.

Bar-coded plates are available to enable 100% traceability of each plate to all raw materials and 100% audit-ability for ISO or other traceability requirements. The bar-coded label can also be used in automated systems for plate tracking, data management, and plate orientation.

Description	Cat. No.
384-Well Bar-Coded SMC <sup>®</sup> Plate (Case of 32 Plates)	ABB2-10160A
384-Well SMC <sup>®</sup> Plate (Case of 32 Plates)	ABB2-00160A
One 384-Well SMC <sup>®</sup> Plate w/ 3 Plate Seals	02-1008-00



To learn how SMC<sup>®</sup> technology can advance your drug discovery research, visit [SigmaAldrich.com/smc-drugdev](https://SigmaAldrich.com/smc-drugdev)

# Use SMC® Technology to Accelerate Your Immunogenicity Studies

Detecting negative immunogenic responses early in the drug discovery process is critical to ensure potential immune responses are identified promptly. Informed decisions can then be made as companies seek to develop effective medicines with improved clinical efficacy and patient safety. Assessing the immunogenicity of a compound occurs via the detection of anti-drug antibodies (ADA). FDA guidelines continue to stress the importance of high sensitivity as this leads to earlier detection of a primary immune response.

Using SMC® technology combined with our unique immunogenicity assay development kit, researchers can develop a homogenous species-independent bridging assay that is simple, easy to design, and verify. The SMC® Immunogenicity Bead-Based Assay Development Kit includes everything you need to develop and verify an ADA assay. The comprehensive assay development protocol is designed to guide and assist you with the process. Our experienced application scientists can also help design, verify, and also train end-users to fully utilize the platform.



IMMUNOGENICITY

Description	Cat. No.
SMC® Immunogenicity Bead-Based Assay Development Kit	03-0175-00
384-Well Bar-Coded SMC® Plate (Case of 32 Plates)	ABB2-10160A
384-Well SMC® Plate (Case of 32 Plates)	ABB2-00160A
One 384-Well SMC® Plate w/ 3 Plate Seals	02-1008-00

Explore more at [SigmaAldrich.com/smc-immunogenicity](https://SigmaAldrich.com/smc-immunogenicity)

## SMCxPRO® Immunoassay System and Services

The SMCxPRO® immunoassay system is a compact affordable system for ultrasensitive biomarker detection. The instrument is designed to read 384-well plates to quantify protein in samples at concentrations three orders of magnitude greater than current technologies. The design has no fluidics making this a low maintenance affordable solution where ultra-high sensitivity is required.



SMCxPRO® Platform & Ancillary Product Services	Cat. No.
SMCxPRO® Complete System	95-0100-00
Standard SMCxPRO® Installation	96-2011-00
SMCxPRO® System Training – 1 Day	96-2022-00
SMC® Advanced Training – 3 Days	96-2023-00
SMCxPRO® IQ/OQ Installation	96-2012-00
SMCxPRO® PQ Service	96-2013-00
BioTek® 405 Touch Microplate Washer with MAG Plate	95-0004-05

**Software is 21CFR part II compliant and LIMS compatible**

### Network/PC Requirement

- Microsoft Windows® 7/10 Operating Systems
- A static IP address and an FTP server
- xPRO Operating and Analysis Software included (32- or 64-bit compliant)

### Read Plate Format

- 384-well plate

### Assay Format

- Bead-based assays
- Plate-based assays

### Instrument Specifications

- Instrument dimensions: 406.4 mm H x 355.6 mm W x 444.5 mm D (16"H x 14"W x 17.5"D)
- Weight: 22.7 kg (50 lbs)
- US: 115 VAC, 50-60 Hz (Operating range 90-125 V)
- International: 230 VAC, 50-60 Hz (Operating range 180-250 V)

### Installation and Training

- Set up of unit on bench and complete calibration of unit
- Run ASSIST program to verify instrument performance
- Optional IQ/OQ and PQ services available

### Three Levels of Onsite Service Support for SMCxPRO® 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

### Minimum Instrument Performance Specifications

Metric	Specification
Slope	>1.2 response/fM <sup>1</sup>
Background	<3 response/fM <sup>1</sup>
Limit of Detection (LOD)	<1 fM
Precision	<10% CV <sup>2</sup>
Dynamic Range	>4 logs

<sup>1</sup> Determined from calibrator set: 0-300 fM of 150 kD antibody labeled with fluorophore

<sup>2</sup> Response measurements from 30 fM calibrator, n=20

### Depot Repair Service Now Available

We now offer the option to ship your instrument to our depot center for service. This includes:

- Preventative maintenance and repair service
- Average turn-around of 5 days or less
- Daily international shipping

## Ancillary Equipment to Optimize SMC® Assays

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



In partnership with BioTek® instruments, we offer the latest advancements in 96-well plate washing: a fully automated system 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



Evaluate the performance of your SMC® plate washer using our SMC® Plate Washer Evaluation Kit. This kit provides all required reagents to run 5 plates, mimicking steps in the SMC® immunoassay with an abbreviated workflow. This allows you to assess the performance of your plate washer and run your assay with confidence.

Description	Cat. No.
SMC® Plate Washer Evaluation Kit	03-0165-00

Explore BioTek® washers for SMC® technology at [SigmaAldrich.com/smc-washer](https://SigmaAldrich.com/smc-washer)

# MILLIPLEX® Analyte Species Index

Analyte	Species	Analyte	Species	Analyte	Species
<b>4-6</b>		B7-H5/VISTA	H	Collagen IV	H
4-1BBL/TNFSF9	H,M	B7-H6	H	Collagen IV – COMP (cartilage oligomeric matrix protein)	H
4E-BP1 (total)	H,M,R	BAD (total)	H	C1q (autoantibody)	H
4E-BP1 (Thr37/46)	H,M,R	BAD (Ser112)	H,M	Complement C1q	H
5'-NT/CD73	H,M,R	BAFF/Blys	H	Complement C2	H
6Ckine/CCL21/Exodus-2	H,M	BAFF/Blys (autoantibody)	H	Complement C3	H
		BAX (total)	H	Complement C3b/iC3b	H
<b>A</b>		BCA-1/CXCL13	H,M,NHP	Complement C4	H
α 1-Acid Glycoprotein (AGP)	H,M,R	Bcl-2 (total)	H	Complement C4b	H
α-1-Antitrypsin (A1AT)	H	Bcl-2 (Ser70)	H	Complement C5	H
α-1 Microglobulin	H	Bcl-xL (total)	H	Complement C5a	H
α-2 Macroglobulin (A2M)	H,M,R	Bcl-xL/BAD (interaction)	H	Complement C9	H
α-Fetoprotein (AFP)	H	BDNF	H,M,R	Complement Factor B	H
α-MSH	H,M,R	Betacellulin	M	Complement Factor H	H
α-Synuclein	H	BIM	H	Complement Factor I	H
ACTH	C,H,M,NHP,R	Blk (Tyr389)	H	Connective Tissue Growth Factor (CTGF)	R
Active Caspase 8 (total)	H	BMP-9	H	Contactin-1	H,M,R
Active Caspase 9 (total)	H	BNP	H	Corticosterone	R
ADAMTS13	H	BRAF (Ser446)	H,M,R	Cortisol	H,Mul
Adiponectin	H,M,R	BRAK/CXCL14	H	CRAF (Ser338)	H,M,R
Adipsin/Factor D	H,M	BTLA	H,M	Creatine Kinase Muscle (CKM)	R
Agouti-Related Protein (AgRP)	H,NHP			CREB (Ser133)	H,M,R
ALK-1 (soluble)	M	<b>C</b>		CREB (total)	H,M,R
Akt/PKB (Ser473)	H,M,R	c-Jun (Ser73)	H,M,R	CTACK/CCL27	H,M
Akt/PKB (total)	H,M,R	c-Kit (panTyr)	H	CTAG1B/NY-ESO-1 (autoantibody)	H
Akt1 (Ser473)	H,M,R	c-Kit/SCFR (soluble)	H	CTLA-4/CD152	H,M
Akt1 (total)	H,M,R	c-Met/HGFR (panTyr)	H	CXCL6/GCP-2	H
Akt2 (Ser474)	H,M,R	c-Myc (total)	H	CXCL16	H,M
Akt2 (total)	H,M,R	C-Peptide	H,NHP	CYFRA21-1	H
Akt3 (Ser472)	H,M,R	C-Peptide 2	M,R	Cystatin C	C,H,M,R
Akt3 (total)	H,M,R	C-Reactive Protein (CRP)	H,M		
Albumin	C,H,R	CA125	H	<b>D</b>	
ALDH1A1	H	CA15-3	H	D-dimer	H
Amphiregulin	M	CA19-9	H	DKK1	H,R
Amylin (active)	H,M,NHP,R	Calbindin	H	DPP4	H
Amylin (total)	C,H	Carbonic Anhydrase 9 (CA9)	H		
Amyloid beta 1-40 (Aβ 1-40)	H,M	Cardiac Troponin I (cTnI)	R	<b>E</b>	
Amyloid beta 1-42 (Aβ 1-42)	H,M	Cardiac Troponin T (cTnT)	R	E-Cadherin	H,M
Angiogenin (ANG)	H	Cathepsin D	H	EGF	H,M,R
Angiopoietin-2	H,M	Caveolin-1 (CAV-1)	R	EGFR/HER1/ErbB1 (soluble)	H
Angiostatin/Kringle	H	CCL28	H	EGFR2/Her2/ErbB2 (soluble)	H
Angiotensinogen (AGT)	H	CCN1/Cyclin B1 (autoantibody)	H	EGFR3/Her3/ErbB3 (soluble)	H
ANGPTL3	H	CD3ε (panTyr)	H	eIF-4B (Ser422)	H,M,R
ANGPTL4	H	CD14 (soluble)	H	eIF-4E (Ser209)	H,M,R
ANGPTL6/AGF	H	CD25/IL-2Ra	H,M	eIF-4G (Ser1108)	H,M,R
Antithrombin III	H	CD27	H,M	eIF2a (Ser51)	H,M,R
Apelin	H	CD28	H	ENA-78/CXCL5	H
Apolipoprotein AI (Apo AI)	H	CD30 (soluble)	H,M	Endocan-1 (ESM-1)	H,M
Apolipoprotein AII (Apo AII)	H	CD30/TNFRSF8	H	Endoglin	H,M
Apolipoprotein B (Apo B)	H	CD31/PECAM-1 (soluble)	H,M	Endostatin	H
Apolipoprotein CII (Apo CII)	H	CD40	H,M	Endothelin-1	H,M
Apolipoprotein CIII (Apo CIII)	H	CD40L (soluble)	H,M,NHP	ENO1 (autoantibody)	H
Apolipoprotein E (Apo E)	H	CD44	H	Eotaxin/CCL11	E,H,M,NHP,R
ApoE4	H	CD80/B7-1	H,M	Eotaxin-2/CCL24/MIP1F-2	H
APRIL	H	CD86/B7-2	H	Eotaxin-3/CCL26	H
Arginase-1 (ARG1)	H,R	CD137/4-1BB/TNFRSF9 (soluble)	H,M,NHP	EpCAM	H
ATF2 (Thr71)	H,M	CD226/DNAM-1	H,M	Erythropoietin (EPO)	H,M,R
ATR (total)	H	CEA	H	ErbB1/EGFR (panTyr)	H
AXL (soluble)	H	CENP-A (Centromere Protein A) (autoantibody)	H	ErbB2/HER2 (panTyr)	H
		CENP-B (Centromere Protein B) (autoantibody)	H	ErbB3/HER3 (panTyr)	H
<b>B</b>		Chk1 (Ser345)	H,M,R	ErbB4/HER4 (panTyr)	H
β-2-Microglobulin	C,H,M,R	Chk2 (Thr68)	H	Erk/MAPK 1/2 (Thr185/Tyr187)	H,M,R
β-Endorphin	H,M,R	CK-MB	H	Erk/MAPK 1/2 (total)	H,M,R
β2-Glycoprotein (autoantibody)	H	Clusterin	C,H,M,R	E-Selectin (soluble)	H,M,R
β-Tubulin (total)	H,M,R	CNTF	H,NHP	Estradiol	Mul
B7-H2/ICOSL	H,M			Extracellular Matrix Protein 1 (ECM1)	H
B7-H3/CD276	H,M				
B7-H4/VTCN1	H				

# MILLIPLEX® Analyte Species Index (continued)

Analyte	Species	Analyte	Species	Analyte	Species
<b>F</b>					
FABP1	H	Hck (Tyr411)	H,M	IL-9	H,M
FABP3	H,R	HE4	H	IL-10	B,C,E,G,H,M,NHP,O,Por,R
FABP4	H	Hepsin	H	IL-10 (autoantibody)	H
FADD (Ser194)	H	HER2/ErbB2 (autoantibody)	H	IL-11	H,M
Fas Ligand (sFasL) (soluble)	H,M,NHP	HGF	H,M	IL-12	Por
Fas/TNFRSF6 (soluble)	F,H,M	HGFR/c-Met (soluble)	H	IL-12 (p40)	F,H,M
Ferritin	H	HIF-1α (autoantibody)	H	IL-12 (p40) (autoantibody)	H
Fetuin A	H	HMGB1	H	IL-12 (p70)	E,H,M,NHP,R
FGF-1/FGF-acidic	H	HSP27 (Ser78)	H	IL-12/23 (p40)	NHP
FGF-2/FGF-basic	E,H,M,NHP	HSP60 (autoantibody)	H	IL-13	E,F,H,M,HNP,R
FGF-19	H	HSP70	H	IL-14/α -Taxilin	H
FGF-21	H,M,R	Human Serum Albumin (HSA)	H	IL-15	C,H,M,NHP,R
FGF-23	H,R	HVEM	H,M	IL-15 (autoantibody)	H
FGFR1 (panTyr)	H	<b>I</b>			
FGL1/Hepassocin	H	I-309/CCL1	H	IL-16	G,H,M,NHP
Fgr (Tyr412)	H,R	ICAM-1 (soluble)	H,M,R	IL-17A/CTLA8	B,E,H,M,NHP,O,R
Fibrinogen	H	ICOS	H	IL-17A/CTLA8 (autoantibody)	H
Fibroblast Activation Protein (FAP)	H	IDO1	H	IL-17A/F	M
Flt3 Ligand	F,H	IFNα2	G,H,NHP	IL-17E/IL-25	H,M,NHP
Flt3 (panTyr)	H	IFNβ	H	IL-17F	H,M
Follistatin (FST)	H,M	IFNβ (autoantibody)	H	IL-17F (autoantibody)	H
Follistatin-like Protein 1 (FSTL1)	H,M,R	IFNβ1	M	IL-18	C,E,F,H,NHP,Por,R
Fractalkine/CX3CL1	E,H,NHP,R	IFNγ	B,C,E,F,G,H,M,NHP,O,Por,R	IL-18BPa	H
FSH	C,H,M,NHP,R	IFNγ (autoantibody)	H	IL-19	H
Fyn (Tyr420)	H,M,R	IgA	H,M	IL-20	H,M
<b>G</b>					
Galectin-1	H,M	IgE	H,M	IL-21	G,H,NHP
Galectin-1 (GAL1) (autoantibody)	H	IGF-1	H	IL-22	H,M,NHP
Galectin-3	H,M	IGF-2	H	IL-22 (autoantibody)	H
Galectin-3 (GAL3) (autoantibody)	H	IGF1R (total)	H,M,R	IL-23	H,M,NHP
GAPDH (total)	H	IGF1R (panTyr)	H	IL-24	H
G-CSF	E,H,M,NHP,R	IGF1R (Tyr1135/1136)	H,M	IL-27	H,M
G-CSF (autoantibody)	H	IGFBP1	H	IL-28A/IFNλ2	H,NHP
GDF-11	H	IGFBP2	H	IL-28B/IFNλ3	H,M
GDF15	H	IGF2BP2/IMP2 (autoantibody)	H	IL-29/IFNλ1	H
GDNF	H	IGFBP3	H	IL-31	H,M,NHP
GH	C,H,M,NHP,R	IGF2BP3/IMP3 (autoantibody)	H	IL-32α	H
Ghrelin (active)	C,H,M,NHP,R	IGFBP4	H	IL-33/NF-HEV (mature)	H,M,NHP
GIP (total)	C,H,M,NHP,R	IGFBP5	H	IL-34	H
GITR	H,M	IGFBP6	H	IL-35	H
GITRL	H	IGFBP7	H	IL-36β/IL-1F8	H
Glial Fibrillary Acidic Protein (GFAP)	H	IgG1	H,M	IL-36Ra/IL-1F5	B,O
GLP-1 (active)	C,H,M,NHP,R	IgG2	H	IL-37/IL-1F7	H
GLP-1 (total)	H,M	IgG2a	M	IL-38/IL-1F10	H
Glucagon	C,H,M,NHP,R	IgG2b	M	Insulin	C,H,M,NHP,R
GM-CSF	C,E,F,H,M,NHP,Por,R	IgG3	H,M	Involucrin	H
GnRH	H,M	IgG4	H	IP-10/CXCL10	B,C,E,H,M,NHP,O,R
GOT1	R	IgM	H,M	IR (total)	H,R
GP130 (soluble)	H,M	IκBa (Ser32)	H	IR (panTyr)	H
Granulysin	H	IKKα/β (Ser177/181)	H	IR (Tyr1162/1163)	H
Granzyme A	H,NHP	IL-1α	B,E,H,M,NHP,O,Por,R	Irisin	H,M,R
Granzyme B	H,M,NHP	IL-1α (autoantibody)	H	IRS1 (Ser636)	H,M,R
GROα	E,H	IL-1β	B,E,F,H,M,NHP,O,Por,R	IRS1 (total)	H,M,R
KC/GRO/CINC-1/CXCL1	R	IL-1RI	H,M	I-TAC/CXCL11	H,NHP
GSK3α (total)	H,M,R	IL-1RII (soluble)	H,M	<b>J</b>	
GSK3α (Ser21)	H,M,R	IL-1Ra	H,NHP,Por	Jag1	H,M
GSK3β (total)	H,M,R	IL-2	C,E,F,G,H,M,NHP,Por,R	JNK/SAPK1 (Thr183/Tyr185)	H,M,R
GSK3β (Ser9)	H,M,R	IL-2Ra (soluble)	H,M	JNK/SAPK1 (total)	H,M,R
GSTα	H,R	IL-3	H,M	Jo-1 (autoantibody)	H
<b>H</b>					
H2A.X (Ser139)	H,M,R	IL-4	B,E,F,H,M,NHP,O,Por,R	<b>K</b>	
Haptoglobin	H,M,R	IL-4R (soluble)	H,M	Kallikrein-6	H
HB-EGF	H	IL-5	E,H,M,NHP,R	KC-like Protein	C
HCC-1/CCL14	H	IL-6	B,C,E,F,G,H,M,NHP,O,Por,R	KC/GRO/CINC-1/CXCL1	F,M
HCC-4/CCL16	H	IL-6 (autoantibody)	H	Keratin-1, 10	H
HCGβ	H	IL-6R (soluble)	H,M	Keratin-6	H
		IL-6Ra (soluble)	H	KIM-1	C,H,M,R
		IL-7	C,H,M,NHP	Ku (autoantibody)	H
		IL-8/CXCL8	B,C,E,F,H,NHP,O,Por		
		IL-8/CXCL8 (autoantibody)	H		

B/Bovine, C/Canine, E/Equine, F/Feline, G/Chicken, H/Human, M/Mouse, Mul/Multi-Species, NHP/Non-Human Primate, O/Ovine, Por/Porcine, R/Rat

# MILLIPLEX® Analyte Species Index (continued)

Analyte	Species	Analyte	Species	Analyte	Species
<b>L</b>		<b>N</b>			
Lactotransferrin (LTF) .....	H	NAP-2/CXCL7 .....	H	ProMMP-9 .....	M
LAG-3 .....	H,M	NCAM (soluble) .....	H	Properdin .....	H
LAT (panTyr).....	H	NCAML1/L1CAM/CD171.....	H	Proteinase 3 (autoantibody) .....	H
Lck (panTyr).....	H,M,R	Nectin-2.....	H	PSA (free) .....	H
Lck (Tyr394).....	H,M,R	Nectin-4 .....	H	PSA (total) .....	H
Leptin .....	C,H,M,NHP,R	Neurogranin (NRGN) .....	H	P-Selectin (soluble) .....	H,M
Leucine-rich alpha-2-glycoprotein 1 (LRG1) .....	H	Neuron-specific Enolase (NSE) .....	H	PTEN (total) .....	H,M,R
Leukemia Inhibitory Factor (LIF).....	H,M,R	Neuropilin-1 (soluble) .....	H	PTEN (Ser380) .....	H,M,R
LH.....	C,H,M,NHP,R	Neurotensin .....	H,M,R	PTH .....	H,R
LIGHT .....	H,M	Neutrophil Elastase-2 (ELA2) .....	H	PVR/CD155 .....	H
LIX/CXCL5 .....	M,R	NFκB (total) .....	H,M,R	PYY (total) .....	C,H,M,NHP,R
L-Selectin (soluble).....	H	NFκB (Ser536).....	H,M,R		
Lymphotactin/XCL1 .....	H	NGAL/Lipocalin-2 .....	C,H,M,R	<b>R</b>	
Lyn (Tyr397).....	H,R	NGF .....	H	RAGE (soluble) .....	H,M
		Notch1.....	M	RANKL .....	H
		NOXA/Mcl-1 (interaction) .....	H	RANTES/CCL5 .....	E,F,G,H,M,HNP,R
		NT-proBNP .....	H	Ras (total).....	H
<b>M</b>				RasG12D (total).....	H
Mannose-Binding Lectin (MBL).....	H	<b>O</b>		RasG12V (total) .....	H
MCAM/MUC18/sCD146.....	H	Oncostatin-M (OSM) .....	H,M	RBP4 .....	C,H
Mcl-1/BIM (interaction).....	H	Osteoactivin .....	H	Renin .....	H,M
Mcl-1 (total) .....	H	Osteocalcin (OC) .....	H	Resistin .....	H,M
MCP-1/CCL2 .....	B,C,E,F,H,M,NHP,R	Osteocrin (OSTN)/Musclin .....	M,R	Resistin P (autoantibody).....	H
MCP-2/CCL8 .....	H	Osteonectin/SPARC .....	H,M,R	Ribosomal P (autoantibody).....	H
MCP-3/CCL7 .....	H	Osteopontin (OPN) .....	C,H,M,R	RNP (Ribonucleoprotein (autoantibody).....	H
MCP-4/CCL13 .....	H	Osteoprotegerin (OPG) .....	H,R	RNP/Smith (RNP/Sm) (autoantibody)....	H
MCP-5/CCL12 .....	M	OX40/CD134.....	H	RPS6 (Ser235/Ser236).....	H,M,R
M-CSF .....	G,H,M	Oxytocin .....	H,M,R	RPS6 (total) .....	H,M,R
M-CSFR (panTyr).....	H				
MDC/CCL22.....	H,M	<b>P</b>		<b>S</b>	
MDH1 .....	H	P16-INK4a (autoantibody).....	H	S100B .....	H
MDM2 (total) .....	H,M,R	p21 (total).....	H	SARS-CoV-2 N .....	H
MEK1 (Ser222) .....	H,M,R	p38/SAPK2A/B (Thr180/Tyr182) ....	H,M,R	SARS-CoV-2 RBD .....	H
Melanoma Inhibitory Activity Protein (MIA) .....	H	p38/SAPK2A/B (total).....	H,M,R	SARS-CoV-2 Spike S1 .....	H
Melatonin .....	H,R	p53 (autoantibody).....	H	SARS-CoV-2 Spike S2 .....	H
Mesothelin .....	H	p53 (Ser15).....	H	SCF .....	F,H
Mi-2 (autoantibody) .....	H	p53 (Ser46) .....	H	Scf-70 (autoantibody) .....	H
MICA .....	H	p70S6 Kinase (total).....	H,M,R	Sclerostin (SOST) .....	H,R
MICB .....	H	p70S6 Kinase (Thr389/412).....	H,M,R	SDF-1/CXCL12 .....	F,H,M
Midkine.....	H	PAI-1 (total) .....	H,M,R	SDH .....	H,R
MIF .....	H	Pancreatic Polypeptide (PP) .....	C,H,M,NHP,R	Secretin.....	H,M
MIG/CXCL9 .....	H,M,NHP	PARK5/UCHL1.....	H	Serum Amyloid A (SAA) .....	H
MIP-1α/CCL3 .....	B,H,M,NHP,O,R	PARK7/DJ1 (Parkinson's Disease Protein 7) .....	H	Serum Amyloid P (SAP).....	H,M
MIP-1β/CCL4 .....	B,G,H,M,NHP,O	PCNA (Proliferating Cell Nuclear Antigen A) (autoantibody) .....	H	Sex Hormone Binding Globulin (SHBG) .....	H
MIP-1δ/MIP-5/CCL15 .....	H	PD-1 .....	H,M	Siglec-7 .....	H
MIP-2/CXCL2 .....	M,R	PDGF-AA.....	H	Siglec-9 .....	H
MIP-3α/CCL20 .....	G,H,M,NHP	PDGF-AB/BB .....	H	Sm (autoantibody) .....	H
MIP-3β/CCL19 .....	H,M	PDGF-BB .....	F	SMAD2 (Ser465/467).....	H,M,R
MIP-4/PARC/CCL18 .....	H	PDGFRα (panTyr) .....	H,M,R	SMAD3 (Ser423/425).....	H,M,R
MMP-1 .....	H	PDGFRβ (panTyr) .....	H	SMAD4 (total) .....	H,M,R
MMP-2 .....	H,M	PD-L1 .....	H,M	SOX2 (autoantibody) .....	H
MMP-3 .....	H,M	PD-L2 .....	H,M	Src (Tyr419).....	H,M,R
MMP-7 .....	H	PEDF .....	H	SSA/Ro52 (Sjögren's Syndrome-related antigen A/Ro52 kDa) (autoantibody) ....	H
MMP-8 .....	H,M	Pentraxin-3 (PTX3) .....	H	SSA/Ro60 (Sjögren's Syndrome-related antigen A/Ro60 kDa) (autoantibody) ....	H
MMP-9 .....	H	Perforin .....	H,NHP	SSB/La (Sjögren's Syndrome-related antigen B/La) (autoantibody).....	H
MMP-10.....	H	Periostin .....	H	STAT1 (Tyr701) .....	H,M
MMP-12.....	H,M	Progranulin (pGRN).....	H	STAT2 (Tyr690) .....	H
MMP-13.....	H	PL-12 (Alanyl-tRNA Synthetase (autoantibody).....	H	STAT3 (total).....	H,M,R
MPIF/CCL23 .....	H	Placental Growth Factor 2 .....	M	STAT3 (Ser727).....	H,M,R
MSK1 (Ser212) .....	H,M	Placental Growth Factor (PLGF) .....	H	STAT3 (Tyr705).....	H,M,R
mTOR (Ser2448) .....	H,M,R	Platelet Factor 4 (PF4)/CXCL4 .....	H	STAT5A/B (total).....	H,M,R
mTOR (total) .....	H,M,R	PM/Scf 100 (autoantibody) .....	H	STAT5A/B (Tyr694/699) .....	H,M,R
Mucin-1 (MUC1) (autoantibody).....	H	Progesterone .....	Mul	STAT6 (Tyr641) .....	H
Myeloperoxidase (MPO) .....	H	Prolactin .....	C,H,M,R	Substance P .....	H,M,R
Myeloperoxidase (MPO) (autoantibody).H					
Myoglobin .....	H				
Myosin Light Chain 3 (MYL3) .....	R				
Myostatin/GDF8 .....	H,M,R				



## MILLIPLEX® Analyte Species Index (continued)

Analyte	Species	Analyte	Species	Analyte	Species
Superoxide Dismutase 1 (soluble) (sSOD1)	H	TIMP-2	H	Uteroglobin	H
Superoxide Dismutase 2 (soluble) (sSOD2)	H	TIMP-3	H	VCAM-1 (soluble)	H
Survivin/BIRC5 (autoantibody)	H	TIMP-4	H	VEGF	G,R
Syk (panTyr)	H	Tissue Factor (TF)	H	VEGF-A	B,H,M,NHP,O,R
<b>T</b>		TLR-2	H,M	VEGF-C	H,M
T3	Mul,R	TNFR1 (total)	H	VEGF-D	H,M
T4	Mul,R	TNF $\alpha$	B,C,E,F,H,M,NHP,O,Por,R	VEGFR1/Flt-1 (panTyr)	H
TARC/CCL17	H,M	TNF $\alpha$ (autoantibody)	H	VEGFR1/Flt-1 (soluble)	H,M
Tau (Total)	H	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)	H,M,NHP	VEGFR2/KDR/Flk-1 (panTyr)	H
Tau (Thr181)	H	TNF RI (soluble) (sTNFR1)	H,M	VEGFR2/KDR/Flk-1 (soluble)	H,M
Testosterone	Mul	TNF RII (soluble) (sTNFR2)	H,M	VEGFR3/Flt-4 (panTyr)	H,M,R
TFF-3	C,H	TPO	H	VEGFR3/Flt-4 (soluble)	H,M
TGF $\alpha$	H,NHP	TRAIL/TNFSF10	H	Vitamin D Binding Protein	H
TGF $\beta$ 1	Mul	Transglutaminase 2 (TGM2)	H	<b>Y</b>	
TGF $\beta$ 2	Mul	TRAP5	H	Yes (Tyr421)	H,M,R
TGF $\beta$ 3	Mul	TREM2	H	YKL40/CHI3L1	H
TGF $\beta$ RII (total)	H	Troponin I (TnI)	H,M	<b>Z</b>	
Thrombomodulin	H,M	Troponin T (TnT)	H,M	ZAP-70 (panTyr)	H
Thrombospondin-1 (TSP-1)	H	TSC2 (total)	H,M,R		
Thrombospondin-2 (TSP-2)	H	TSC2 (Ser939)	H,M,R		
TIE1 (panTyr)	H	TSH	C,H,M,NHP,R		
TIE2 (panTyr)	H	TSLP	H		
Tie-2 (soluble)	H	TWEAK	H		
TIM-3	H,M	<b>U</b>			
TIMP-1	H,M,R	ucMGP	H		
		uPAR (soluble)/CD87	H		
		Uromodulin	H		

B/Bovine, C/Canine, E/Equine, F/Feline, G/Chicken, H/Human, M/Mouse, Mul/Multi-Species, NHP/Non-Human Primate, O/Ovine, Por/Porcine, R/Rat

H/Human pp. 18-22; NHP/Non-Human Primate p. 23; M/Mouse pp. 23-25; R/Rat pp. 25-26; Other/Multi-Species pp. 26-27; Cell Signaling kits pp. 28-31

### What's in the 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 ♦▲*
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 Panel II

☐ (Cat. No. HCP2MAG-62K)

23 (Cat. No. HCP2MAG-62K-PX23)

23 (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/ MIPF-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. HCP4MAG-64K-PX20)

20 (Bulk Cat. No. HCP4MAG64KPX20BK)

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)

13 (Cat. No. HSTCMAG28SPMX13) ♦

13 (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 ♦	

### 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	

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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

∪ Urine only

## 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	MIP-3 $\alpha$ /CCL20
IL-15	TNF $\alpha$
IL-17A/CTLA8	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)

## Human CD8+ T Cell

17 (Cat. No. HCD8MAG-15K)

17 (Cat. No. HCD8MAG15K17PMX)

17 (Bulk Cat. No. HCD8MAG15K17BK)

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**

17 (Cat. No. HCMPEX1-19K)

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

## Human Complement Panel 2

17 (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
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## 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 $\alpha$	

## Immune Response

### Human Autoimmune Autoantibody\*\*

(Cat. No. HAIAB-10K)

**QUALITATIVE KIT**

$\beta$ 2-Glycoprotein	Ribosomal P
C1q	RNP
CENP-A (Centromere Protein A)	(Ribonucleoprotein)
CENP-B (Centromere Protein B)	RNP/Smith (RNP/Sm)
Jo-1	Scl-70
Ku	Sm
Mi-2	SSA/Ro52 (Sjögren's Syndrome-related antigen A/Ro52 kDa)
Myeloperoxidase (MPO)	SSA/Ro60 (Sjögren's Syndrome-related antigen A/Ro60 kDa)
PCNA (Proliferating Cell Nuclear Antigen A)	SSB/La (Sjögren's Syndrome-related antigen B/La)
PL-12 (Alanyl-tRNA Synthetase)	
PM/Scl 100	
Proteinase 3	

## Human Cytokine Autoantibody\*\*

(Cat. No. HCYTAAB-17K)

**QUALITATIVE KIT**

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

## 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	

## Human Sepsis Panel 3

(Cat. No. HSP3MAG-63K)

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

## Human Skin (Skin extracts only)

(Cat. No. SKINMAG-50K)

Cortisol $\wedge$	Involucrin
Human Serum Albumin (HSA)	Keratin-1,10
	Keratin-6

## Human Immunoglobulin Isotyping

17 (Cat. No. HGAMMAG-301K)

IgA	IgG3
IgG1	IgG4
IgG2	IgM

## Human IgE - Singleplex

(Cat. No. HGAMMAG-303E)

IgE	
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## 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-1 $\beta$	Leptin
IL-6	MCP-1/CCL2
IL-8/CXCL8	NGF
Insulin	TNF $\alpha$

### Human Adipocyte (Cell culture samples)

(Cat. No. HADCYMAG-61K)

Adiponectin	MCP-1/CCL2
HGF	NGF
IL-1 $\beta$	PAI-1 (total)
IL-6	Resistin
IL-8/CXCL8	TNF $\alpha$
Leptin	

## Human Diabetes

5 (Cat. No. HDIAB-34K-PMX5)

5 (Bulk Cat. No. HDIAB34KPMX5BK)

**NON-CONFIGURABLE KIT**

C-Peptide	Insulin
GLP-1 (active) $\blacktriangleright$	Leptin
Glucagon $\blacktriangleright$	

## Human Metabolic Hormone V3

(Cat. No. MHM3-34K)

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

## 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. HLPPMAG-57K)

$\alpha$ -Fetoprotein (AFP)	FGF-19
ANGPTL3	FGF-21
ANGPTL4	FGF-23
ANGPTL6	HGF
FABP1	

## Human IGF Binding Protein $\blacktriangleright$

(Cat. No. HIGFBMAG-53K)

IGFBP1	IGFBP5
IGFBP2	IGFBP6
IGFBP3*	IGFBP7
IGFBP4	

## Human IGF $\blacksquare$

(Cat. No. HIGFMAG-52K)

IGF-1	IGF-2
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## Human Pituitary Panel 1

(Cat. No. HPTP1MAG-66K)

ACTH	FSH
Agouti-Related Protein (AgRP)	GH
CNTF	LH
	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 $\text{S}$	NGAL/Lipocalin-2
GDF15	sP-Selectin
sICAM-1	Serum Amyloid A
Myeloperoxidase (MPO)	sVCAM-1

### Human CVD Panel 3 (Acute Phase)

(Cat. No. HCVD3MAG-67K)

$\alpha$ -1-Acid Glycoprotein (AGP)	Haptoglobin	sL-Selectin
$\alpha$ -2-Macroglobulin	Platelet Factor 4 (PF4)/CXCL4	
Adipsin/Factor D	Serum Amyloid P (SAP)	
CRP		
Fetuin A		
Fibrinogen $\text{O}$		

### Human CVD Panel 4

(Cat. No. HCVD4MAG-67K)

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

### 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

\*\* 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

$\text{O}$  Available for custom premix

$\text{O}$  Analyte requires a different sample dilution from others in panel

$\text{O}$  Analyte cannot be measured in serum

$\#$  Requires sample acidification

$\text{S}$  Analyte cannot be measured in plasma

$\text{U}$  Urine only

**Human CVD Panel 6**

(Cat. No. HCVD6MAG-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. HRNKLMAG-51K-01)

RANKL	
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**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 2**

(Cat. No. HCCBP2MAG-58K)

Antithrombin III Complement Factor H (CFH)	Extracellular Matrix Protein 1 (ECM1) Vitamin D Binding Protein
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**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 (PLGF)
FGF-1/FGF-acidic	VEGF-A
FGF-2/FGF-basic	VEGF-C
Follistatin (FST)	VEGF-D
G-CSF	

**Human Angiogenesis Panel 2**

(Cat. No. HANG2MAG-12K)

Angiostatin/Kringle	sIL-6Rα
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

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## 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>†</sup>	Ferritin
ApoE4 <sup>‡</sup>	Neurogranin (NRGN)
FABP3	TREM2

### Human Neurodegenerative Disease Panel 1

(Cat. No. HNDG1MAG-36K)

α-2-Macroglobulin	Complement Factor C3
Apo AI	Complement Factor H (CFH)
Apo CIII	
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>‡</sup>	Soluble Superoxide Dismutase 2 (sSOD2)
Kallikrein-6	

## Human Neuropeptide<sup>■</sup> ^

(Cat. No. HNPAG-35K)

α-MSH	Oxytocin
β-Endorphin	Substance P
Neurotensin	

## Human Circadian Stress<sup>■</sup> ^

(Cat. No. HNCSTMAG-35K)

Cortisol	Melatonin
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## 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. HLINJMAG-75K)

5'NT/CD73	MDH1
ARG1	SDH
GSTα	

## Explore Biomarkers for Alzheimer's Disease Research

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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

⊂ Urine only

# PRIMATE

## Immunology

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

- ☐ (Cat. No. PRCYTA-40K)
- 38 (Cat. No. PRCYTA-40K-PX38)♦
- 38 (Cat. No. PRCYTA-40K-BK38)♦
- 48 (Cat. No. PRCYTA-40K-PX48)
- 48 (Cat. No. PRCYTA-40K-BK48)

BCA-1	IL-15♦
sCD137♦	IL-16
CD40L♦	IL-17A♦
Eotaxin	IL-17E
sFASL♦	IL-18♦
FGF-2	IL-21♦
Fractalkine	IL-22♦
G-CSF♦	IL-23♦
GM-CSF♦	IL-28A
Granzyme A♦	IL-31
Granzyme B♦	IL-33♦
IFN $\alpha$ 2♦	IP-10♦
IFN $\gamma$ ♦	I-TAC♦
IL-1 $\alpha$	MCP-1♦
IL-1 $\beta$ ♦	MIG♦
IL-1RA♦	MIP-1 $\alpha$ ♦
IL-2♦	MIP-1 $\beta$ ♦
IL-4♦	MIP-3 $\alpha$ ♦
IL-5♦	Perforin♦
IL-6♦	RANTES♦▲°
IL-7♦	TGF $\alpha$ ♦
IL-8♦	TNF $\alpha$ ♦
IL-10♦	TNF $\beta$
IL-12 (p70)♦	VEGF-A♦

### Non-Human Primate Cytokine/Chemokine Panel 1

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

sCD40L	IL-12/23 (p40)
G-CSF	IL-13
GM-CSF	IL-15
IFN $\gamma$	IL-17A/CTLA8
IL-1 $\beta$	IL-18
IL-1Ra	MCP-1/CCL2
IL-2	MIP-1 $\alpha$ /CCL3
IL-4	MIP-1 $\beta$ /CCL4
IL-5	TGF $\alpha$
IL-6	TNF $\alpha$
IL-8/CXCL8	VEGF-A
IL-10	

### Non-Human Primate Cytokine/Chemokine Panel 2

- ☐ (Cat. No. PRCYT2MAG40K)
- 24 (Cat. No. PRCYT2MAG40K-PX24)
- 24 (Bulk Cat. No. PRCY2MG40PMX24BK)
- 25 (Cat. No. PRCYT2MAG40K-PX25)
- 25 (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/IFN $\lambda$ 2
Granzyme A	IL-31
Granzyme B	IL-33/NF-HEV (mature)
IL-1 $\alpha$	IP-10/CXCL10
IL-2	MIP-3 $\alpha$ /CCL20
IL-4	Perforin
IL-6	RANTES/CCL5 ▲
IL-16	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)
IL-17A/CTLA8	

## Metabolism/ Endocrinology

### Non-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)
- 25 (Cat. No. MCYTOMAG-70K-PMX)♦
- 25 (Bulk Cat. No. MCYTOMAG70PMX25BK)♦
- 32 (Cat. No. MCYTOMAG-70K-PX32)
- 32 (Bulk Cat. No. MCYTOMAG70PMX32BK)

Eotaxin/CCL11	IL-13♦
G-CSF♦	IL-15♦
GM-CSF♦	IL-17A/CTLA8♦
IFN $\gamma$ ♦	IP-10/CXCL10♦
IL-1 $\alpha$ ♦	KC/GRO/CINC-1/ CXCL1♦
IL-1 $\beta$ ♦	LIF
IL-2♦	LIX
IL-3	MCP-1/CCL2♦
IL-4♦	M-CSF
IL-5♦	MIG/CXCL9
IL-6♦	MIP-1 $\alpha$ /CCL3♦
IL-7♦	MIP-1 $\beta$ /CCL4♦
IL-9♦	MIP-2/CXCL2♦
IL-10♦	RANTES/CCL5♦
IL-12 (p40)♦	TNF $\alpha$ ♦
IL-12 (p70)♦	VEGF-A

### Mouse Cytokine/Chemokine Panel 2

- ☐ (Cat. No. MECY2MAG-73K)
- 15 (Cat. No. MECY2MAG-73KPBX)
- 15 (Bulk Cat. No. MECY2MAG73KPBXBK)

Erythropoietin (EPO)	IL-17A/F
Exodus-2/ CCL21/6Ckine	IL-20
Fractalkine/CX3CL1	MCP-5/CCL12
IFN $\beta$ 1	MDC/CCL22
IFN $\gamma$	MIP-3 $\alpha$ /CCL20
IL-11	MIP-3 $\beta$ /CCL19
IL-16	TARC/CCL17
	TIMP-1

### Mouse High Sensitivity T Cell

- ☐ (Cat. No. MHSTCMAG-70K)
- 18 (Cat. No. MHSTCMAG-70KPMX)
- 18 (Bulk Cat. No. MHSTCMAG-70KPBXBK)

GM-CSF	IL-10
IFN $\gamma$	IL-12 (p70)
IL-1 $\alpha$	IL-13
IL-1 $\beta$	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	TNF $\alpha$

## Non-Human Primate Cytokine Analysis

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

Read more at [SigmaAldrich.com/milliplex-primate](http://SigmaAldrich.com/milliplex-primate)

**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. MMMP1MAG-79K)

MMP-2	MMP-8
MMP-3	

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

(Cat. No. MMMP2MAG-79K)

proMMP-9	MMP-12
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**Mouse MMP Panel 3 (Cell culture samples)**

(Cat. No. MMMP3MAG-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

**Mouse IgE – Singleplex**

(Cat. No. MGAMMAG-300E)

IgE	
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**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	
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**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. MCV1MAG-77K)

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

**Mouse CVD Panel 2**

(Cat. No. MCV2MAG-77K)

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

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▲ 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

∪ 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
Angiotensin-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)
- 🔍 (Cat. No. MCKP1-110K-PX28)
- 🔍 (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/CXCL-13	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)
- 🔍 (Cat. No. RECYMAG65K27PMX)
- 🔍 (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**

(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▶	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
	TNF $\alpha$
	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)

$\alpha$ -1-Acid Glycoprotein (AGP)	Haptoglobin
$\alpha$ -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)

$\alpha$ -MSH	Oxytocin
$\beta$ -Endorphin	Substance P
Neurotensin	

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

(Cat. No. RKT1MAG-37K)

Clusterin	Osteopontin (OPN)
GST $\alpha$ ^	TIMP-1
IP-10/CXCL10	VEGF-A
KIM-1	

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

(Cat. No. RKT2MAG-37K)

$\alpha$ -1-Acid Glycoprotein (AGP)	Cystatin C
Albumin^	EGF
$\beta$ -2-Microglobulin	NGAL/ Lipocalin-2

**Rat Liver Injury**

(Cat. No. RLI1MAG-92K)

5'NT/CD73	GST $\alpha$
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)

IFN $\gamma$	IL-36RA/IL-1F5
IL-1 $\alpha$	IP-10/CXCL10
IL-1 $\beta$	MCP-1/CCL2
IL-4	MIP-1 $\alpha$ /CCL3
IL-6	MIP-1 $\beta$ /CCL4
IL-8/CXCL8	TNF $\alpha$
IL-10	VEGF-A
IL-17A/CTLA8	

**Canine Cytokine/Chemokine**

- (Cat. No. CCYTOMAG-90K)
- 15 (Cat. No. CCYTMAG-90K-PX13)
- 15 (Bulk Cat. No. CCYTMAG90KPX13BK)

GM-CSF	IL-15
IFN $\gamma$	IL-18
IL-2	IP-10/CXCL10
IL-6	KC-like
IL-7	MCP-1/CCL2
IL-8/CXCL8	TNF $\alpha$
IL-10	

**Chicken Cytokine/Chemokine**

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

IFN $\alpha$	IL-21
IFN $\gamma$	M-CSF
IL-2	MIP-1 $\beta$ /CCL4
IL-6	MIP-3 $\alpha$ /CCL20
IL-10	RANTES/CCL5
IL-16	VEGF

**Equine Cytokine/Chemokine**

- (Cat. No. EQCYTMAG-93K)
- 23 (Cat. No. EQCYTMAG-93K-PX23)
- 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
IFN $\gamma$	IL-18
IL-1 $\alpha$	IP-10/CXCL10
IL-1 $\beta$	MCP-1/CCL2
IL-2	RANTES/CCL5
IL-4	TNF $\alpha$
IL-5	

**MILLIPLEX® Veterinary Medicine and Animal Health Kits**

Expand your possibilities in animal health research with our wide selection of biomarker kits.

Read more at [SigmaAldrich.com/vetmed](http://SigmaAldrich.com/vetmed)**Legend key for MILLIPLEX® kits**

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  - 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
- ⊂ 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

- 10 (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

- 10 (Cat. No. PCYTMAG-23K)  
 15 (Cat. No. PCYTMG-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

- 10 (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 ▶	

MULTIPLE

MILLIPLEX® IMMUNOLOGY / METABOLISM / ENDOCRINOLOGY / TOXICITY

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.


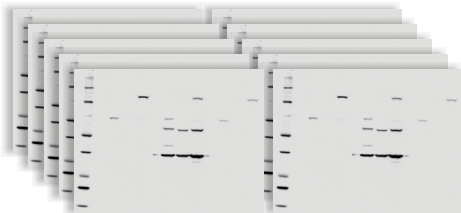
# Cell Signaling MILLIPLEX® Assays

## Uncover how your cells communicate

We offer three kit formats in our MILLIPLEX® Cell Signaling portfolio to meet your diverse needs:

1. Phosphoprotein or total protein (or mixed) multiplex assays ( $\geq$  3-plex)
2. Same protein phosphoprotein and total protein in the same assay (2-plex)
3. Singleplex MAPmate™ kits you can use as loading controls in multiplex kits

## Our cell signaling multiplex kits give you the gift of time and sample, for example:

10 Proteins 12 Samples	MILLIPLEX® Assays		Western Blots	
Number of 96-well plates or acrylamide gels				
Number of samples per plate or gel	12 (>40 samples can be measured in duplicate)		12	
Total data points per plate or gel	120 (>400 data points can be measured per plate)		12	
Total time to result	2.5 hours + overnight incubation (~18 hr)		Days/weeks	
Amount of protein required (µg)	1-25 µg of total protein per well (all 10 proteins measured in same sample)		10-50 µg total protein per lane (100-500 µg total protein for 10 gels)	

### 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

- 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

**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

**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/Flk-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

**NFκB — 6 Plex**(Cat. No. 48-630MAG) AB1 ▼ **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
c-Myc	✓		H
FADD		✓ (Ser194)	H
IκBa		✓ (Ser32)	H
IKKα/β		✓ (Ser177/181)	H
NFκB		✓ (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

**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)

**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

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

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

**Akt3 Phospho/Total – 2 Plex**(Cat. No. 48-633MAG) AB2 ▼ \* ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
Akt3		(Ser472)	H, M, R
Akt3	✓		H, M, R

**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

**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

**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

**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

**MAPmate™ Singleplex Loading Control Assays**

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

Our custom immunoassay team can assist with differently configured cell signaling assays. For more information on this program, contact your sales specialist.

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

**MILLIPLEX® Cell Signaling Research**

Dive deeper into signaling pathways at [SigmaAldrich.com/milliplex-cs](https://SigmaAldrich.com/milliplex-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

# Multiplexed Biomarker Analysis Using Luminex® Systems

## Driving Assay Consistency

Enhance your data generation with our Luminex® instrument solutions. 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. Our ongoing dedication and industry-leading experience with multiplex technology enable you to gain more information quickly and reliably.

## 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, enabling you to do your work faster, gaining the early and comprehensive data so critical to your work.



## Specifications

Instruments	xMAP® INTELLIFLEX DR-SE*	xMAP® INTELLIFLEX RU0	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.



## Instrument Service

We offer the service contracts described below at the point of instrument sale. Multi-level service contracts provide coverage from Luminex® engineers tailored to the use of your new instrument. Our staff can help you install the instrument, train you to use your platform, and continue to supply you with the appropriate reagents to run it as required.

### Point of Instrument Sale Service Contracts

Luminex® System 1 Year Warranty Plans	Unlimited Remote Support	Unlimited Emergency Repair	1 (PM)	2 (PM)	Cat. No.
FLEXMAP 3D®, Bronze	•		•		SVCLUMBRZFM3D
FLEXMAP 3D®, Silver	•	○	•		SVCLUMSLVFM3D
FLEXMAP 3D®, Gold	•	○	•		SVCLUMGLDFM3D
FLEXMAP 3D®, Gold 360*	•	○	•		SVCLUMGLD360FM3D
FLEXMAP 3D®, Platinum	•	●		•	SVCLUMPLTFM3D
FLEXMAP 3D®, Platinum 360*	•	●		•	SVCLUMPLT360FM3D
Luminex® 200™, Bronze	•		•		SVCLUMBRZ
Luminex® 200™, Silver	•	○	•		SVCLUMSLV
Luminex® 200™, Gold	•	○	•		SVCLUMGLD
Luminex® 200™, Gold 360*	•	○	•		SVCLUMGLD360
Luminex® 200™, Platinum	•	●		•	SVCLUMPLT
Luminex® 200™, Platinum 360*	•	●		•	SVCLUMPLT360
MAGPIX®, Standard	•	○			SVCLUMGLDMAGPIX
MAGPIX®, Gold	•	○	•		SVCMAGPIXGOLDPM
MAGPIX®, Platinum	•	●		•	SVCMAGPIXPLATPM
INTELLIFLEX RUO, Gold	•	○	•		IFLEX-GOLD
INTELLIFLEX RUO, Platinum	•	●		•	IFLEX-PLATINUM
INTELLIFLEX DR-SE, Gold	•	○	•		IFLEX-DRSE-GOLD
INTELLIFLEX DR-SE, Platinum	•	●		•	IFLEX-DRSE-PLAT

All the above service plans are offered/sellable only at point of instrument sale.

● Onsite 1-business day response ○ Onsite 2-business days response

1 (PM) = includes 1 preventive maintenance; 2 (PM) = includes 2 preventive maintenances

\* 360 service includes on-site support for assays developed by Luminex® technology only



### Choose the Best Multiplexing Platform for Your Research

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

## Instrument and Kit Consumables and Training

### Consumables

Description	Pack Size	Cat. No.
MAGPIX® Drive Fluid PLUS (RUO)	4 pack, 750 mL ea	40-50030
xMAP® Sheath Fluid PLUS (RUO)	20 L	40-50021
xMAP® Sheath Concentrate PLUS (RUO)	1 L	40-50023
MAGPIX® Calibration Kit	25 uses	MPX-CAL-K25
MAGPIX® Performance Verification Kit	25 uses	MPX-PVER-K25
Luminex® 200™ Calibration Kit (xPONENT®)	25 uses	LX2R-CAL-K25
Luminex® 200™ Performance Verification Kit (xPONENT®)	25 uses	LX2R-PVER-K25
FLEXMAP 3D® Calibration Kit	25 uses	F3D-CAL-K25
FLEXMAP 3D® Performance Verification Kit	25 uses	F3D-PVER-K25
xMAP® INTELLIFLEX Calibration Kit	20 uses	IFX-CAL-K20
xMAP® INTELLIFLEX Verification Kit	20 uses	IFX-PVER-K20

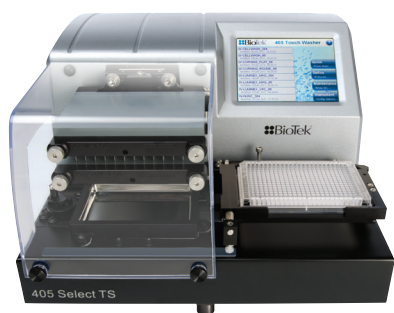
### Training/IQ/OQ

Description	Cat. No.
MAGPIX® System Onsite Installation and Training	TRONSITE-MAGPIX
MAGPIX® IQ/OQ	VP-MAGPIX-XP0N-IQOQ
Luminex® 200™ System Onsite Installation and Training	TRONSITE-LX200
Luminex® 200™ IQ/OQ	VP-LX-XP0N-IQOQ
FLEXMAP 3D® System Onsite Installation and Training	TRONSITE-FM3D
FLEXMAP 3D® IQ/OQ	VP-FM3D-XP0N-IQOQ
BioTek® Washer Onsite Installation and Training	TRONSITE-BIOTEK
MILLIPLEX® Kits Training	TRONSITE-MPX
xMAP® INTELLIFLEX IQ/OQ	VP-IFLEX-IQOQ
xMAP® INTELLIFLEX OQ	VP-IFLEX-OQ
xMAP® INTELLIFLEX System Onsite Installation and Training	TRONSITE-IFLEX



# BioTek® Washing & Dispensing Solutions for MILLIPLEX® Assays

In partnership with BioTek® instruments, we offer the latest advancements in fully automated magnetic separation for 96- and 384-well plate washing systems. The MultiFlo™ FX dispenser allows users to dispense kit reagents, ensuring excellent assay reproducibility.



**BioTek® 405™ Select TS (Touch Screen) Washer**

## BioTek® washer advantages:

- Fast and hands-free full plate washing
- The BioTek® 405™ TS models in 96- and 384-well options include 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	40-096
BioTek® 405™ TS Magnetic 384-Well Washer Complete with Touch Screen and Ultrasonic Cleaning	40-384

## BioTek® MultiFlo™ FX Automated Reagent Dispenser

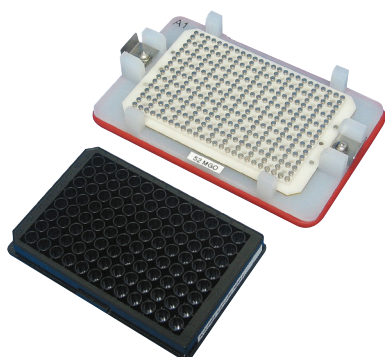


### The perfect instrument for MILLIPLEX® 384-well assays

- Fully automated process, just load your standards, quality controls, and samples, and walk away
- Optimized for both 384- and 96-well plates
- The performance of a larger robot for a fraction of the cost
- Self-contained, programmable reagent dispenser enables precise liquid delivery

Description	Cat. No.
BioTek® MultiFlo™ FX Automated Reagent Dispenser	40-099

## Handheld Magnetic Separator Block for 96-Well Flat Bottom or Conical Well Plates



A low-cost alternative to automated plate washers without loss of assay performance. Simply decant or “flick” the liquid contents and blot the remainder on a paper towel. Magnetic beads are securely held in the wells by the block magnets.

Description	Cat. No.
Handheld Magnetic Separator Block for 96-Well Flat Bottom or Conical Well Plates	40-285

# Conferma™ ELISAs: Engineering Reproducibility

Conferma™ ELISAs are developed to increase the reproducibility of immunoassays through detailed analysis of their critical reagents lot to lot. Using physicochemical evaluation techniques, each component is confirmed against previous lots prior to manufacturing.

## Evaluation Techniques

- **1D Gel Analysis:** Confirms the size and purity of the reagents.
- **Amino Acid Analysis (AAA):** Determines protein concentration.
- **Liquid Chromatography–Mass Spectrometry (LC-MS/MS):** Provides protein sequence coverage (standard curve recombinant proteins (rProteins)).
- **Reverse Phase – LC-MS (RP-LC-UV-MS):** Gives measured mass of proteins (for monoclonal antibodies (mAbs) and rProteins, with and without biotinylation).
- **Surface Plasmon Resonance (SPR):** Shows binding affinity of mAbs and the rProtein used in the standard curve.

Details of this process can be found in a granular verification report for each assay available online. For instance, the evaluation of the Conferma™ IL-6 ELISA demonstrated:

- The standard curve material matched the reported sequence for Human IL-6 from the Universal Protein Resource (UniProt) accession # P05231 AA30-212.

**Sequence Coverage for Calibrator Lot 028M4878V**  
 VPPGEDSKDVAAPHRQPLTSSERIDKQIRYILDGIALRKETCNKSNMCESS  
 KEALAENNLNLPKMAEKDGCQSGFNEETCLVKIITGLLEFEVYLEYLQNRFE  
 SSEEQARAVQMSTKVLIQFLQKKAKNLDAITTPDPTTNASLLTKLQAQNWQL  
 QDMTTHLILRSFKFLQSSLRALRQM

**Sequence Coverage for Calibrator Lot 015M4836V**  
 VPPGEDSKDVAAPHRQPLTSSERIDKQIRYILDGIALRKETCNKSNMCESS  
 KEALAENNLNLPKMAEKDGCQSGFNEETCLVKIITGLLEFEVYLEYLQNRFE  
 SSEEQARAVQMSTKVLIQFLQKKAKNLDAITTPDPTTNASLLTKLQAQNWQL  
 QDMTTHLILRSFKFLQSSLRALRQM

- The measured mass of each reagent lot was extremely similar.

Sample	Measured masses (Da)	Moles of Biotin/moles of antibody
Lot 028M4878V	20977	NA
Lot 015M4836V	20977	NA
IL6.2F2 (Lot RB1811028)	148728	NA
IL6.2F2 (Lot RB1812003)	148735	NA
IL6.2F2 (Lot RB1912001)	148728	NA
IL6.2E3 (Lot RB1811029)	148937	NA
IL6.2E3 (Lot RB1812002)	148934	NA
IL6.2E3 (Lot RB1912002)	148933	NA
IL6.2E3 Bt (Lot RB1811029)	Distribution with Bt=4 at 150744	3
IL6.2E3 Bt (Lot RB1812002)	Distribution with Bt=4 at 150744	4
IL6.2E3 Bt (Lot RB1912002)	Distribution with Bt=4 at 150748	8

\*Bt = biotin; Da = Dalton; MS = mass spectrometry

- Each mAb lot had a high affinity and activity against the standard curve rProtein.

No.	Ligand (Antibody)	IL-6 Calibrator	KD (nM)	% Activity
1	17M4830V-control	028M4878V	0.04	85
2	IL6.2F2 Capture RB1811028	015M4836V	0.13	86
3	IL6.2F2 Capture RB1811028	028M4878V	0.05	84
4	IL6.2F2 Capture RB1812003	015M4836V	0.14	88
5	IL6.2F2 Capture RB1812003	028M4878V	0.06	88
6	IL6.2F2 Capture RB1912001	028M4878V	0.05	93

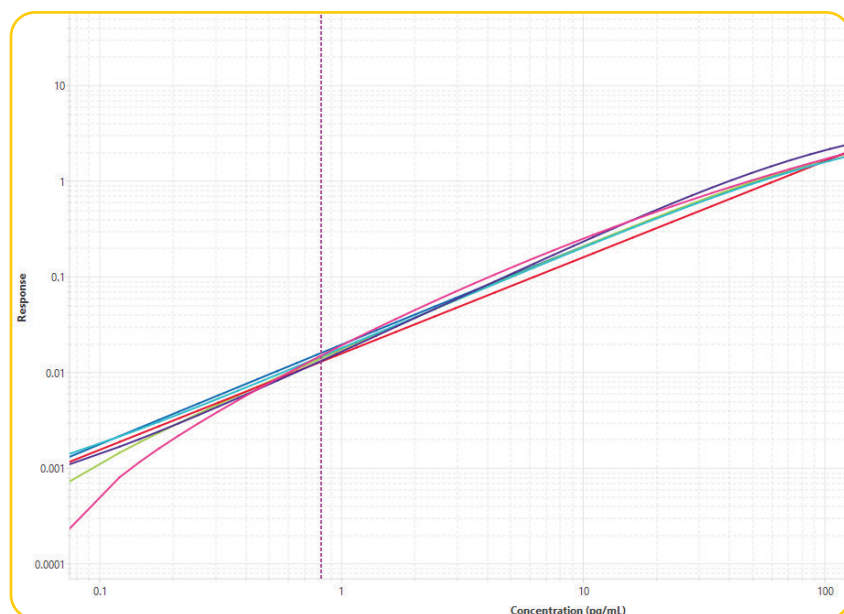
### Finished Assay Testing

Three separately manufactured lots of assays were evaluated by collaborators in a blind study to evaluate the reproducibility of the assays in an independent laboratory with two scientists running the assays. This allows for the evaluation of the performance similarity, lot to lot, with multiple users and when possible, multiple laboratories.

### Example of Conferma™ ELISAs run in an independent laboratory (2 scientists using 2 plates from 3 lots of assays)

Using the Belysa® Immunoassay Curve Fitting Software (Cat. No. 40-122) curves were compared for parameters such as recovery, LLOQ, and parallelism across ELISAs from the same lot, across multiple lots, and across multiple users to confirm reproducibility.

### Slope Parallelism Displayed Using Belysa® Immunoassay Curve Fitting Software



### Slope Ratios Calculated with Belysa® Immunoassay Curve Fitting Software

Plate	Parallelism	LLOQ (pg/mL)	LOD (pg/mL)
Plate 2	1.009	0.82	0.23
Plate 3	0.987	0.82	0.10
Plate 4	0.989	0.82	0.09
Plate 5	0.989	0.82	0.08
Plate 6	1.012	0.82	0.20
Reference Plate 1		0.82	0.17

### Reproducibility

Current testing demonstrates that confirming the performance of critical reagents enhances the reproducibility of ELISAs in the hands of independent laboratories. On average, labs have achieved LLOQs at the lowest point on the standard curve and slope ratios of 1 +/- 0.1 indicating excellent similarity, between plates, lots, and users.

### Conferma™ ELISAs

Product Name	Cat. No.
Human IL-6 Conferma™ ELISA	EZIL6-98K
Human IL-8 Conferma™ ELISA	EZHIL8-100K
Human MCP-1 Conferma™ ELISA	EZMCP1-99KRM
Human TNFα Conferma™ ELISA	Coming Soon!

Discover more at [SigmaAldrich.com/conferma](http://SigmaAldrich.com/conferma)

## Millipore® Brand ELISAs

### Metabolic/Endocrine/Cytokine

Our menu of metabolic, endocrine, and cytokine ELISAs gives end-users a consistent and reliable method of investigating metabolic disease states or defining outcomes within toxicological studies during drug development.

Description	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	EZRGRT-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	Human	1.17–150 pg/mL	1.17 pg/mL	50 µL	EZIL6-98K	EZIL6-98K10PK
IL-8	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
Insulin (Animal serum free)	Human	2–200 µU/mL	0.85 µU/mL	20 µL	EZHIASF-14K	
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	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	

\* 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

Get a complete picture of the complexities associated with normal and disease states of the nervous system with reliable quantification of biomarkers using our neuropeptide and neurodegenerative ELISAs.

Description	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	5-1000 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	EZRMPY-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	2.7-2000 pg/mL	1.3 pg/mL	50 µL	EZHS100B-33K

### Radioimmunoassays (RIAs)

RIAs have long been considered a valuable, economical, and accurate way to measure protein concentration. As many researchers move away from using radioactive material, please consider using our other high-quality immunoassays for your research needs.


Description	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	10–1000 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 LisPro	Multi-Species	2.5–250 µU/mL	2.5 µU/mL	100 µL	LPI-16K
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 and sample types. A variety of research areas are addressed, from inflammation and cardiovascular disease to metabolic and veterinary research.

### ELISA Designations

- Sandwich ELISA
  - Standard off-the-shelf assay
  - Some may be designated “lysate” to accommodate the change from serum, plasma, or supernatant
- Custom Sandwich ELISA
  - Requires custom manufacture and verification
  - Upcharge may apply
- EIA
  - Competitive ELISA
- Cell-Based Phosphorylation ELISA
  - For use on cell lysates to detect phosphorylation events

	Cytokines	Metabolic	Cardiovascular	Angiogenesis	Signaling
	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓
	✓	✓		✓	✓
	✓				
	✓	✓			
	✓				
	✓				
	✓				
	✓				
	✓	✓			

**Sigma-Aldrich®**

Lab & Production Materials



## ELISA Reading and Washing Equipment in Partnership with BioTek® Instruments

Supporting our collection of ELISA products, we are pleased to offer the BioTek® 800 TS Absorbance Reader and 50 TS Plate Washer which together provide a cost-effective addition to your ELISA work flow.

### BioTek® 800 TS Absorbance Reader

For Millipore® and Sigma-Aldrich® ELISAs



- Precise, accurate, and versatile, used for many applications, including ELISA, protein and other end-point assays, plus kinetics and cell-based assays
- Software options: Basic, Gen 5, and Gen 5 Secure
- Flexible filter options; 450 nm, 590 nm, 630 nm, and 750 nm as standard
- Optional absorbance test NIST traceable plate
- Color touchscreen for quick programming and simple operation
- USB flash drive for convenient data export
- Durable and high-quality design
- Gen 5 Secure Software (Optional Part Number)

Description	Cat. No.
BioTek® 800 TS Absorbance Reader, Gen 5 Software	40-006

### BioTek® 50 TS Plate Washer

BioTek® 50 TS Magnetic 96-Well Automated Strip Washer



- Color touchscreen makes programming quick and easy
- Easy touch operation for washing full or partial plates
- Reliable and safe: liquid level sensing
- Automated switching of up to 3 buffers for even greater automation
- Automated, built-in maintenance routines for continued reliable operation
- Replaces the BioTek® ELx50 Magnetic 96-Well Strip Washer

Description	Cat. No.
BioTek® 50 TS Plate Washer	40-301

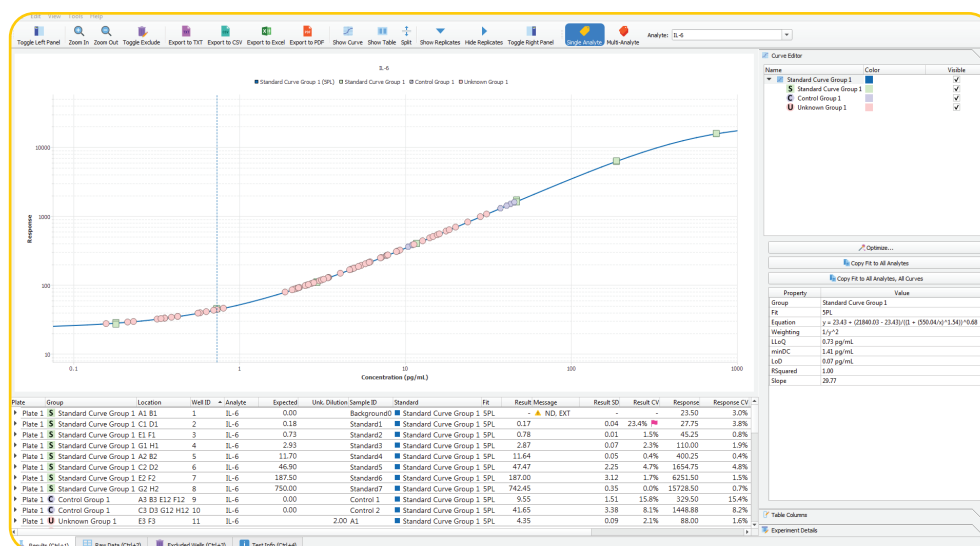
# Belysa® Immunoassay Curve Fitting Software

(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.

## Belysa® Software 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 7/10 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.

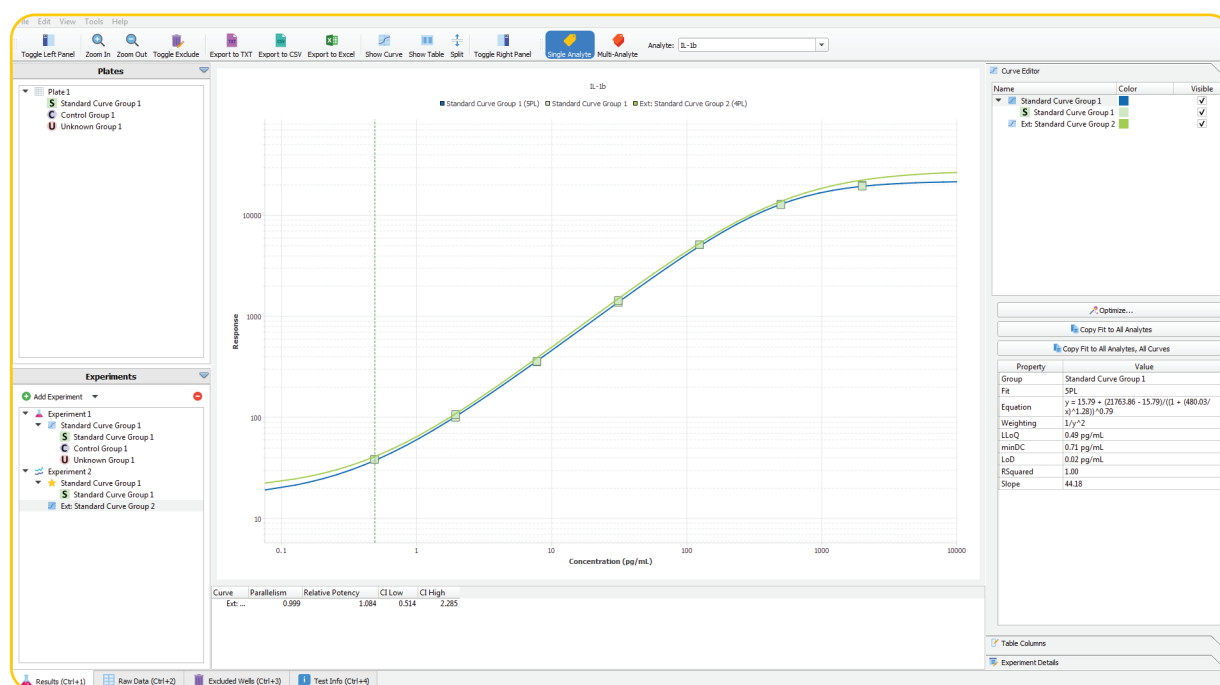
Example 2. Belysa® data annotation: below LLOQ (yellow triangle), %CV (pink flags)

## 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

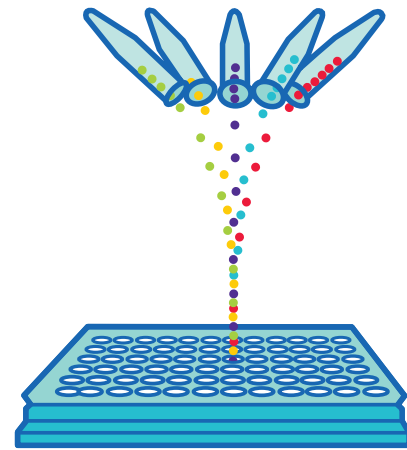


Example 3. Comparison of two standard curves in Belysa® software from two lots of the same MILLIPLEX® assay run 1 year apart

## Custom Immunoassay Development

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

- Develop new analytes
- Multiplex new analytes with existing analytes
- Recombine existing analytes into new panels
- Convert existing assays to 384-well format
- Design and verify assays for your samples
- Kit bridging for lot-to-lot consistency
- Custom kit reagents and formatting
- Minimum order quantity required



### Get started today!

View a complete listing of services at [SigmaAldrich.com/customassay](https://SigmaAldrich.com/customassay)

**STEP 1**  
Visit either link on this page and “Request Information”; fill in your contact information along with the analytes’ full protein names, species, and samples type; submit your request

**STEP 2**  
Receive work plan and quotation from sales specialist

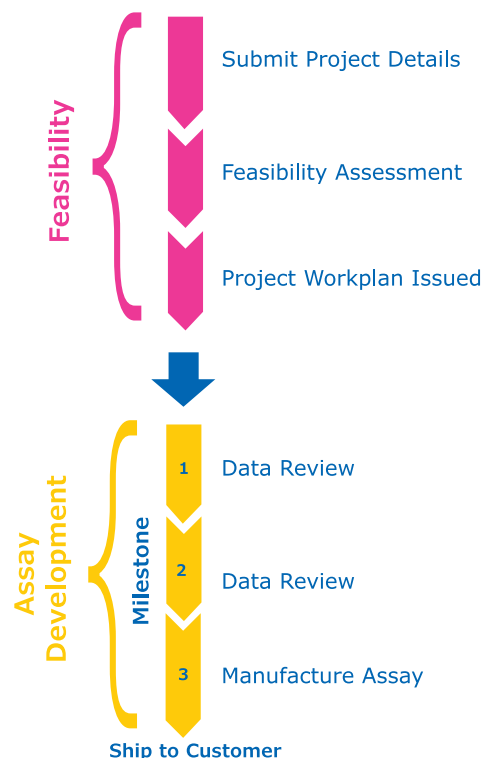
**STEP 3**  
Place purchase order and participate in project kickoff call

## Custom Assay Project Workflow

**SPR (Special Product Release):** Leverage our knowledge base of pre-verified analyte/panel combinations. Select analytes from up to three panels and we will assess the combination feasibility.

**SPRCUS (Special Product Release – Custom):** For more complex analyte and panel combinations, or for those which have not been pre-verified, we base feasibility upon compatible sample dilution, matrix, sample preparation requirements, and known analyte cross-reactivity. Once ordered, and prior to kit release, we test cross-reactivity of antibodies to other analytes in the same custom panel and optimize the final assay and protocol. Should a combination fail testing, we will provide you with alternate assay options.

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



# Custom MILLIPLEX® Analytes

Analyte	Species (Sample Types)	Analyte	Species (Sample Types)
α-1 Antichymotrypsin	H (S/P)	IGF-1	M, R (S/P)
α-2 Antiplasmin	H (S/P)	IL-18	M, R (S/P)
AGP (α 1-Acid Glycoprotein)	H (U)	IL-33R/ST2 (Suppressor of Tumorigenicity 2)	H (S/P)
Akt/PKB (Ser473)	H, M, R (Lys)**	JNK/SAPK1 (Thr183/Tyr185)	H, M (Lys)**
Akt/PKB (total)	H, M, R (Lys)**	JNK/SAPK1 (total)	H, M (Lys)**
Angiopoetin-1	H (S/P, T)	LPGDS (Lipocalin like prostaglandin D synthase)	H (U)
Anti-Cardiolipin antibody IgA	H (S/P)	Lysozyme C	H (S/P)
Anti-EBV VCA IgG	H (S/P)	MIP-1γ	M, R (S/P)
Anti-Phosphatidylserine IgG, IgM	H (S/P)	MR-proADM	H (S/P)
Apolipoprotein A-IV	H (S/P)	mTOR (Ser2448)	H, M, R (Lys)**
Arginase 1	M (S/P)	mTOR (total)	H, M, R (Lys)**
AXL (s)	M, R (S/P)	Osteoprotegrin (OPG)	M (S/P, Sup)
BAD (Ser112)	H, M (Lys)**	p300	H, M, R (Lys)
BCMA (B-cell Maturation Antigen)	H (S/P)	p38/SAPK2A/B (Thr180/Tyr182)	H, M, R (Lys)**
BMP-9	M, R (S/P)	p38/SAPK2A/B (total)	H, M, R (Lys)**
BRD4	H, M, R (Lys)	Periostin	M, R (S/P)
Caspase 3 (Active)	H, M (Lys)**	PODXL	M, R (S/P)
CBP	H, M, R (Lys)	Prealbumin (Transthyretin)	H (S/P)
CD13 Aminopeptidase N	H (S/P)	Procalcitonin	H, M, R (S/P)
CD163 (s)	H (S/P)	Prostaglandin D Synthase (lipocalin-type)	H (S/P, CSF, Sup)
Ceruloplasmin	H (U)	Sclerostin (SOST)	M (S/P, Sup)
Cleaved PARP (total)	H (Lys)**	Semaphorin 3A	H (Sup)
CSTB (Cystatin B)	H (S/P)	STAT1 (total)	H, M (Lys)**
DKK1	M (S/P, Sup)	STAT1 (Tyr701)	H, M (Lys)**
Elafin	H (S/P)	Tenascin C	M, R (S/P)
ERK/MAPK 1/2 (Thr185/Tyr187)	H, M, R (Lys)**	Thyroxine Binding Globulin	H (S/P)
ERK/MAPK 1/2 (total)	H, M, R (Lys)**	TRAIL	M, R (S/P)
FGF-23	M (S/P, Sup)	Transferrin	H (U)
Fibronectin	H (S/P)	Vasopressin	M, R (P)
G3BP (Galectin 3 Binding Protein)	H (U)	VE Cadherin/Cadherin 5	H (S/P)
Gas-6	H, M, R (S/P)	Vitronectin	M, R (S/P)
Granzyme A	M (S/P)	Wnt-3a	H (S/P, Sup, Lys)
Gremlin	M, R (S/P)	Zinc-α-2 Glycoprotein	H (S/P)
GRP78	H (S/P)		
HGFR/cMET	M, R (S/P)		
I-FABP	H (S/P)		

## Species Key

H Human  
M Mouse  
R Rat

## 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)

## Expert Custom Assay & Sample Testing (CAST) Services for SMC® Technology

We understand you don't always have the time or resources to develop your own assay for your protein of interest or to test your critical samples. Our CAST team has over 130 years of combined immunoassay development experience with core expertise in SMC® technology. Let us help you accelerate your program from discovery research into clinical trials with a custom designed program for you.

### Our services include:

#### Collaborative Biomarker Discovery & Development

- Preclinical to early clinical sample testing
- Immunoassay development
- Biomarker verification to sponsor requirements

#### Biotherapeutic Development

- Pharmacokinetics
- Pharmacodynamics
- Immunogenicity

#### Reagent Selection

- Reagent sourcing
- Screening and selection
- Antibody derivatization
- QC generation

#### Sample Testing

- Prototype sample testing
- Proprietary kit sample testing
- SMC® immunoassay kit testing

Utilize our SMCxPlore™ Services that include customized streamlined options to “explore” SMC® technology with your analyte of interest or critical samples.

#### SMCxPlore™ Assay Development Feasibility:

Development of a prototype assay using your antibody pairs and standard for your own custom and proprietary SMC® kits.

#### SMCxPlore™ Proof of Concept Sample Testing:

Sample testing of up to 30 of your critical samples using one of our highly verified SMC® immunoassays.

### The New Home of the SMC® CAST Services Team

In their new state of the art facility at our St. Louis, Missouri USA headquarters, the Custom Assay and Sample Testing (CAST) team remains committed to providing excellent SMC® custom assay services. Whether you are seeking to outsource sample testing work for an analyte from our growing biomarker kit menu or need assistance developing a new assay for your exact research needs, we are here to help. Please contact your local sales representative to learn how the CAST team can help accelerate your discovery.



# 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

## 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

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.



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