

# Analyte Quarterly

Vol. 2 2020

Look closer at your assays, platforms and results in your multiplex and single protein detection assays

- SMC™ (Single Molecule Counting) Assays
- ELISA
- RIA
- MILLIPLEX® Assays
- Custom Assay Development



The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

**Millipore®**

Preparation, Separation, Filtration & Monitoring Products

# We Strive for the Ideal Immunoassay

Researchers rely on commercial immunoassays to study biomarker expression in a wide variety of samples. 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 sub-picogram/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.

## Look Closer at our Advantages

### Published Performance

- Broadest analyte selection across research areas and species
- Over 10,000 published papers with data generated using our immunoassays
- Configurable and customizable kits for your exact research needs

### Quality

- Over four decades of immunoassay development and manufacturing expertise
- Assays developed 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 analysis and reporting

## Complete Immunoassay Testing Platforms



	MILLIPLEX®	SMC™ using SMCxPRO™ Instrument	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	3-4 log	4-5 log	2-3 log
Assay	MILLIPLEX® or any Luminex® assay	SMC™	Any ELISA or RIA
Instrument	Luminex®: FLEXMAP 3D®, Luminex® 200™, MAGPIX®	SMCxPRO™	Any ELISA reader, or gamma counter (for RIA)

## NEW IMMUNOASSAY PRODUCTS

### NEW! MILLIPLEX®, Single Molecule Counting (SMC™) and ELISA Kits

Description	Species	Cat. No.
<b>MILLIPLEX® Panels</b>		
Metabolic Hormone Panel V3	Human	HMH3-34K
SARS-CoV-2 Antigen Panel 1 IgA	Human	HC19SERA1-85K
SARS-CoV-2 Antigen Panel 1 IgG	Human	HC19SERG1-85K
SARS-CoV-2 Antigen Panel 1 IgM	Human	HC19SERM1-85K
Cytokine/Chemokine	Chicken	GCYT1-16K
<b>SMC™ Immunoassay Kits</b>		
IFNβ High Sensitivity Immunoassay Kit	Human	03-0191-00
Tau (T181) High Sensitivity Immunoassay Kit	Human	03-0184-00
IL-18 High Sensitivity Immunoassay Kit	Human	03-0190-00
α-Synuclein (S129) High Sensitivity Immunoassay Kit	Human	03-0188-00
SARS-CoV-2 RBD IgG Kit	Human	03-0193-00

### Coming Soon

Description	Species	Cat. No.
<b>MILLIPLEX® Panels</b>		
Fibrosis Panel 1	Human	Coming Soon!
<b>SMC™ Streamlined Kits</b>		
α-Synuclein (total) High Sensitivity Immunoassay Kit	Human	Coming Soon!
SARS-CoV-2 S1 IgA Kit	Human	Coming Soon!
SARS-CoV-2 RBD IgM Kit	Human	Coming Soon!
<b>ELISA Kits</b>		
IL-6	Human	EZIL6-98K
IL-8	Human	EZIL8-100K
MCP-1	Human	EZMCP1-99KRM

#### 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:

[www.sigmaaldrich.com/pc/ui/multiplex-home/milliplex](http://www.sigmaaldrich.com/pc/ui/multiplex-home/milliplex)

For customers in all other countries start your search here:

[www.merckmillipore.com/milliplex](http://www.merckmillipore.com/milliplex)

# Immunoassay Kits for COVID-19 Research

We are committed to providing researchers with reliable resources and tools to support the fight against COVID-19 (SARS-CoV-2). In response to the need for SARS-CoV-2-specific immunoassay kits, we have developed MILLIPLEX® and SMC™ kits that detect antibodies against SARS-CoV-2 antigens in human serum or plasma samples. These immunoassay kits can assist in COVID-19 research efforts for critical vaccine development, epidemiology, and population research studies. **For Research Use Only. Not For Use In Diagnostic Procedures.**

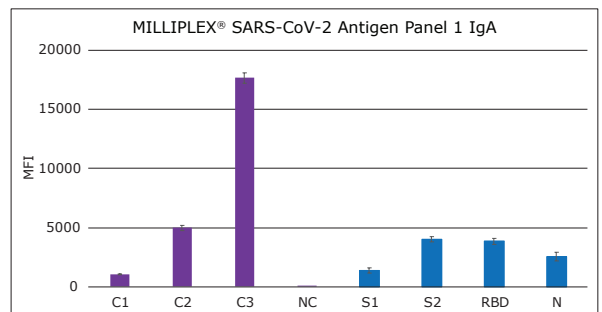
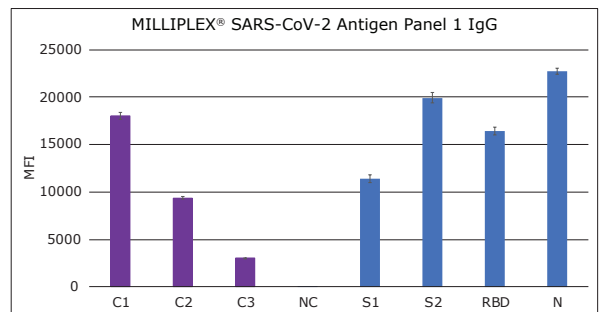
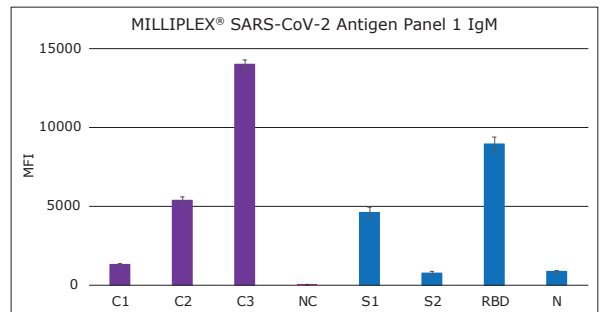
## MILLIPLEX® Panels for COVID-19 Research

Choose your kit by first selecting the isoform of interest: IgM, IgG, or IgA. Then configure which antigens you wish to interrogate by selecting any or all of the SARS-CoV-2 antigens: Nucleocapsid Protein (N), Spike Protein Subunit S1, Spike Protein Subunit S2, and/or the Receptor Binding Domain (RBD). Each all-in-one qualitative kit comes with 4 assay control beads. **For Research Use Only. Not For Use In Diagnostic Procedures.**

Description	Cat. No.
SARS-CoV-2 Antigen Panel 1 IgM	HC19SERM1-85K
SARS-CoV-2 Antigen Panel 1 IgG	HC19SERG1-85K
SARS-CoV-2 Antigen Panel 1 IgA	HC19SERA1-85K

### Example Data

Reagent COVID-19 convalescent patient sample, detergent-solvent inactivated, was assayed according to protocol in each of the three MILLIPLEX® SARS-CoV-2 Antigen Panels for IgM, IgG, and IgA binding to the four SARS-CoV-2 antigens. Assay control beads C1, C2, C3, and Negative Control are shown in purple. Note that the assay control beads for the IgG assay are shared components with our autoantibody kits and are in reverse order of high, medium, and low IgG bound to bead. Antigen-beads for SARS-CoV-2 S1, S2, RBD, N are shown in blue. (Mean, n=4 separate assays, +/- SD).



## MILLIPLEX® Human Cytokine/Chemokine/Growth Factor Panel A for Cytokine Storm Research

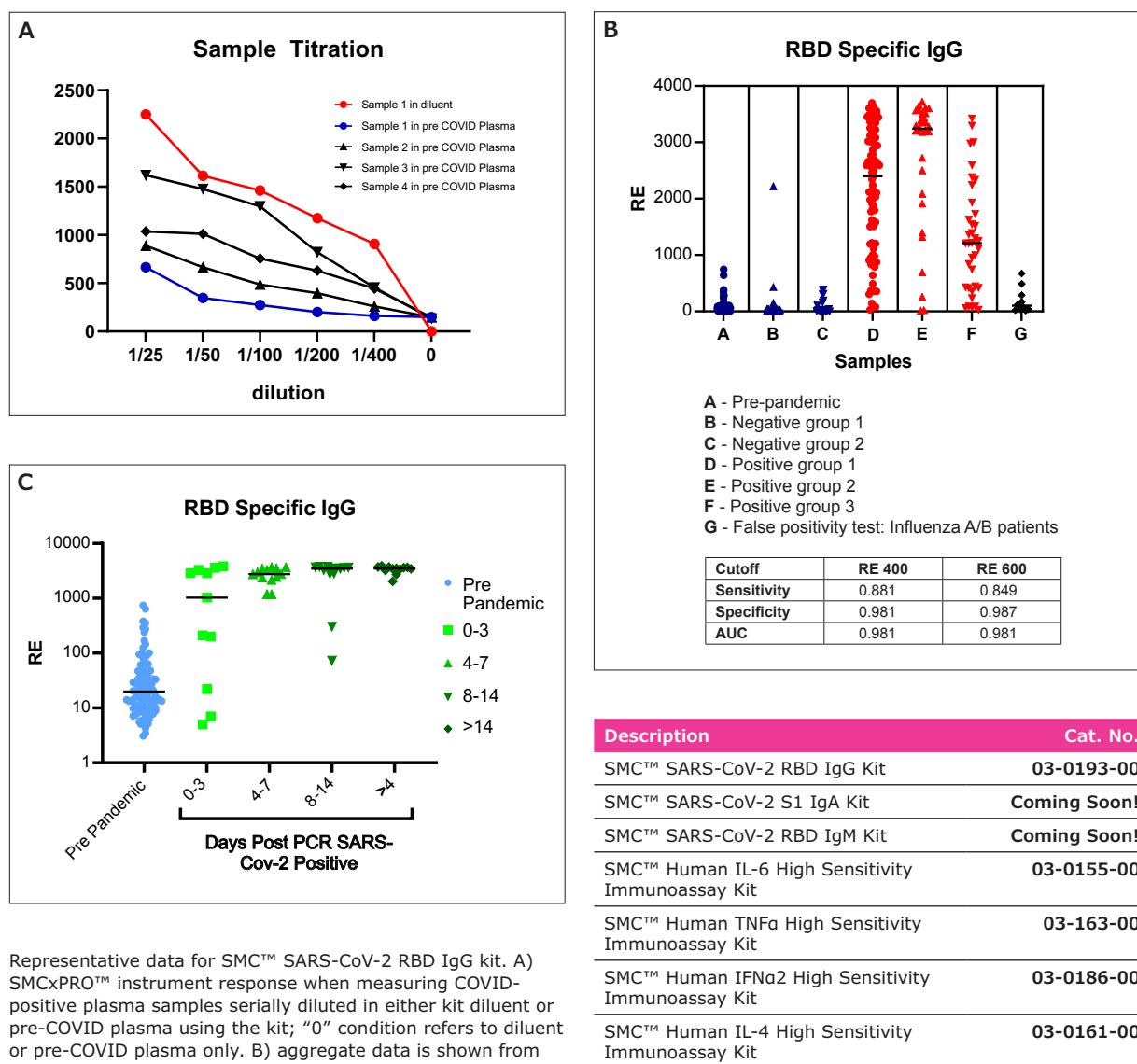
In response to SARS-CoV-2 viral infection of the lungs, a cytokine storm can result. Over-produced immune cells and their signaling molecules cause a local inflammatory response in the lungs leading to respiratory distress and reduced blood oxygen levels. A cytokine storm can contribute to severe clinical symptoms.

Our MILLIPLEX® multiplex immunoassays offer researchers the ability to simultaneously quantitate many analytes critical to understanding the immune response in humans. Our 48-plex Human Cytokine/Chemokine/Growth Factor Panel A (Cat. No. HCYTA-60K) saves time and sample for a snapshot of analyte profiles during a cytokine storm, sepsis, or other disease states. We offer a wide array of MILLIPLEX® soluble protein panels and cell signaling kits to help elucidate the downstream signaling pathways when researching antiviral immune response. Our portfolio offers the widest range of analytes across the most species, including nonhuman primate panels for vaccine research. **For Research Use Only. Not For Use In Diagnostic Procedures.**

Learn more about MILLIPLEX® multiplex assays for research applications and explore how our panels are being used to understand COVID-19 at [sigmaaldrich.com/milliplex-covid-19](https://sigmaaldrich.com/milliplex-covid-19)

## SMC™ Kits for COVID-19 Research

Our SMC™ SARS-CoV-2 antibody detection kits enable researchers to accurately and specifically detect antigen-specific immune responses to the novel coronavirus in human serum or plasma samples. Utilizing the capabilities of the ultrasensitive SMC™ platform, these assays increase the confidence with which the detection of IgG, IgM, and IgA against SARS-CoV-2 antigens can be achieved. These kits can be particularly helpful to researchers evaluating the efficacy of SARS-CoV-2 candidate vaccines, as well as scientists wishing to perform longitudinal experiments, population profiling, and epidemiological studies. Our menu of SMC™ high sensitivity cytokine assays complement these kits by enabling thorough profiling of immune effector functions associated with antigen-specific response. **For Research Use Only. Not For Use In Diagnostic Procedures.**



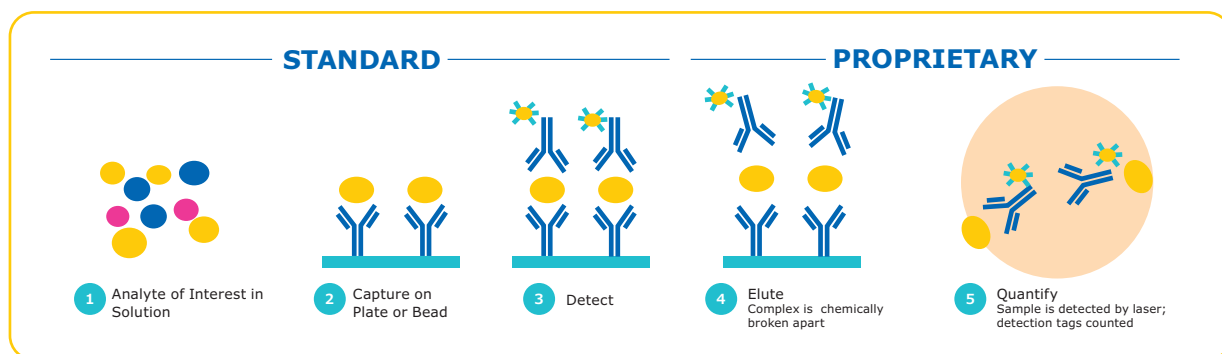
Representative data for SMC™ SARS-CoV-2 RBD IgG kit. A) SMCxPRO™ instrument response when measuring COVID-positive plasma samples serially diluted in either kit diluent or pre-COVID plasma using the kit; "0" condition refers to diluent or pre-COVID plasma only. B) aggregate data is shown from in-house testing of ~300 donor plasma samples consisting of pre-pandemic, SARS-CoV-2 negative, and SARS-CoV-2 positive plasma samples. Influenza A/B samples were also analyzed to demonstrate minimal false positivity from cross-reactivity. Based on this dataset, when employing example cutoff of 400 response events (RE), sensitivity and specificity are calculated using Youden's J Statistic to be 88% and 98%, respectively. C) SARS-CoV-2 RBD-specific IgG detection on pre-pandemic (n=100) and SARS-CoV-2 PCR positive plasma, binned chronologically based on days post PCR positive (n=11 for 0-3d, n=13 for 4-7d, n=13 for 8-14d, n=12 for >14d). Horizontal bars correspond to median instrument response for each individual subgroup.

# SMC™ Technology

## Single Molecule Counting (SMC™) Technology: Reduced background + increased signal

SMC™ 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™ technology achieves improved signal-

to-noise ratios over traditional immunoassay technologies. The SMC™ 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™ 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™ and Erenna® instruments capture the sum of all digital events counted above the background threshold. The digital event algorithm of the SMCxPRO™ instrument computes digital events across a spectrum of time series for a single standard. On the Erenna®, at lower concentrations, photons are digitally counted as single molecules. At higher concentrations, molecules are counted in analog and a proprietary algorithm computes the total sum of all photons recorded. The digital counting of molecules thus improves the assay sensitivity and extending the assay dynamic range beyond what can be achieved with traditional methods.

Visit our Learning Center at [www.sigmaldrich.com/smc](http://www.sigmaldrich.com/smc) for the latest information on SMC™

- Webinars and presentations
- Videos and posters
- Literature on the latest applications, Homebrew assay development and Custom Development/Testing Services

# 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)	MTO or STOCK	Cat. No.
Akt1 (Ser473)	0.98	NA	H, M, R	L	varies <sup>8</sup>	MTO	03-0100-01
Akt1 (total)	7.80	NA	H, M, R	L	varies <sup>8</sup>	MTO	03-0099-01
Amyloid beta 1-40 <sup>6,7</sup>	5.86	Normal CSF: 1366; P: 152	H, M, R	C, P	5, 25	STOCK	03-0145-00
Amyloid beta 1-42 <sup>6,7</sup>	0.98	Normal CSF: 192; P: 15	H, M, R	C, P	5, 25	STOCK	03-0146-00
BDNF <sup>6,7</sup>	0.04	P: 783; S: 410; CSF: 0.13	H	C, P, S	100, 1, 1	STOCK	03-0171-00
cTnI <sup>6,7</sup>	0.69	P: 3.04; S: 3.02	H, Cy, R, C, GP	P, S	100	STOCK	03-0154-00
G-CSF	0.08	17	H	P	10	MTO	03-0047-00
GLP-1 (active)	0.40	3.46	H, M, R, C	P	100	MTO	03-0024-03
GLP-1 (total)	0.39	17.8	H, M, R, C	P	20	MTO	03-0025-06
Glucagon <sup>6,7</sup>	0.78	44	H, M, R	P	10	STOCK	03-0153-00
GM-CSF	0.02	0.2	H	P	100	MTO	03-0067-00
IFN-α <sup>26,7</sup>	0.031	P: 0.08; S: 0.08	H	P, S	100	STOCK	03-0186-00
IFN-β1 <b>NEW</b>	0.15	P: 0.35; S: 0.64	H	P, S	50	STOCK	03-0191-00
IFN-γ <sup>6,7</sup>	0.03	P: 1.4; S: 1.4	H	P, S	25	STOCK	03-0181-00
IL-1α <sup>6,7</sup>	0.12	P: 0.09; S: 0.10	H	P, S	100	STOCK	03-0167-00
IL-1β <sup>6,7</sup>	0.20	P: 0.11; S: 0.12	H	P, S	100	STOCK	03-0160-00
IL-2	0.05	0.21	H	P, S	100	MTO	03-0051-00
IL-21	0.20	0.53	H	S	50	MTO	03-0014-07
IL-22 <sup>6,7</sup>	0.10	P: 1.51; S: 1.52	H	P, S	25	STOCK	03-0162-00
IL-23 <sup>6,7</sup>	0.10	P: 0.65; S: 0.46	H	P, S	100	STOCK	03-0157-00
IL-4 <sup>6,7</sup>	0.04	P: 0.18; S: 0.18	H	P, S	100	STOCK	03-0161-00
IL-5 <sup>6,7</sup>	0.04	P: 0.37; S: 0.30	H	P, S	100	STOCK	03-0168-00
IL-6 <sup>6,7</sup>	0.08	P: 0.70; S: 0.69	H	P, S	75	STOCK	03-0155-00
IL-7	0.39	4.91	H	P, S	50	MTO	03-0094-00
IL-8 / CXCL8	0.24	3.6	H	P, S	50	MTO	03-0055-00
IL-10 <sup>6,7</sup>	0.10	P: 0.90; S: 0.89	H	P, S	100	STOCK	03-0176-00
IL-12p70 <sup>6,7</sup>	0.05	P: 0.29; S: 0.28	H	P, S	100	STOCK	03-0182-00
IL-13 <sup>6,7</sup>	0.04	P: 0.37; S: 0.33	H	P, S	100	STOCK	03-0156-00
IL-15	0.10	3.38	H	P, S	100	MTO	03-0058-00
IL-17A/F Heterodimer <sup>6,7</sup>	1.17	P: 1.36; S: 3.20	H	P, S	50	STOCK	03-0177-00
IL-17A <sup>6,7</sup>	0.07	P: 0.31; S: 0.30	H	P, S	50	STOCK	03-0159-00
IL-17F <sup>6,7</sup>	0.20	P: 1.10; S: 1.18	H	P, S	50	STOCK	03-0164-00
IL-18 <sup>6,7</sup> <b>NEW</b>	0.09	P: 138; S: 145	H	P, S	10	STOCK	03-0190-00
KIM-1 <sup>5</sup>	3.91	P: 65; S: 75; U: 147	H	P, S, U	25, 25, 5	MTO	03-0118-00
MCP-1 <sup>6,7</sup>	0.15	P: 682; S: 1021	H	P, S	1.56	STOCK	03-0187-00
Tau(Thr181) <sup>6,7</sup> <b>NEW</b>	0.94	P: 3.4; S: 2.0; C: 21	H	P, S, C	50, 100, 25	STOCK	03-0184-00
TNFα	0.40	38.6	M	S	25	MTO	03-0108-00
TNFα <sup>6,7</sup>	0.20	P: 0.85; S: 0.78	H	P, S	100	STOCK	03-0163-00
TSLP <sup>6,7</sup>	1.56	P: 5.04; S: 3.86	H	P, S	100	MTO	03-0172-00
VEGF-A <sup>6,7</sup>	0.20	P: 48; S: 50	H	P, S	25	STOCK	03-0180-00
α-Synuclein(Ser129) <sup>6,7</sup> <b>NEW</b>	0.1	P: 2.74; S: 1.81; C: 0.64	H	P, S, C	20, 20, 50	STOCK	03-0188-00
SARS-CoV-2 RBD IgG <b>NEW</b>	NA <sup>9</sup>	NA <sup>9</sup>	H	P, S	2	STOCK	03-0193-00

<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> Assay characteristic data is representative for both Erenna® and SMCxPRO™.

<sup>7</sup> Streamlined format kit.

<sup>8</sup> Sample volume varies based on dilution factor selected by user

<sup>9</sup> Qualitative assay

For a complete list of kits qualified on both the SMCxPRO™ and Erenna® instruments, visit [sigmaaldrich.com/smc](http://sigmaaldrich.com/smc)

# Mouse Plate-based Discovery Immunoassay Kits

Discovery immunoassays are provided as complete kits to run on your Erenna® platform

- Reproducible LLOQ
- Simple workflow
- Minimal sample volume

Analyte	LLOQ (pg/mL)	Median Endogenous (pg/mL)	Species	Sample Type	Cat. No.
Mouse IL-5	0.24	6.1	M	S	03-0132-00
Mouse IL-10	6.2	8.3	M	S	03-0134-00
Mouse IL-13	3.91	12.0	M	S	03-0133-00
Mouse IL-17A	0.98	9.2	M	S	03-0123-00
Mouse IL-17F	0.49	2.2	M	S	03-0125-01
Mouse IL-21	4.9	44.0	M	S	03-0126-00
Mouse IL-22	100	195	M	S	03-0127-00
Mouse TNFa	0.49	28.4	M	S	03-0137-00

## Aurora High-Performing Microplates for Use on the SMCxPRO™ System



Partnering with Aurora Microplates, Inc., we are the exclusive distributor of the High-Performance 384-Well Microplate- specifically packaged for use on the SMCxPRO™. Enhanced detection and stability of your biological materials are critical for generating consistent, high quality data. Containing a flat-bottom design with a high transmittance window, Aurora plates are optimized for imaging. Available in two convenient package sizes.

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

Description	Cat. No.
384-well Bar-coded Aurora plate (Case of 32 plates)	ABB2-10160A
384-well Aurora plate (Case of 32 plates)	ABB2-00160A
One 384-well Aurora plate w/ 3 plate seals	02-1008-00

To learn how SMC™ technology can advance your drug discovery research, visit our website at [www.merckmillipore.com/smc-immunogenicity](http://www.merckmillipore.com/smc-immunogenicity)



# SMC™ New Product Highlights

## New SMC™ assays to empower blood-based neurodegenerative disease studies

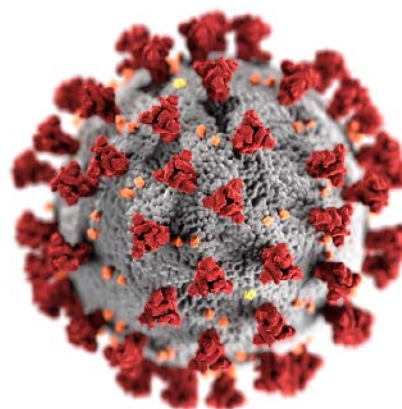
Alzheimer's Disease (AD) and Parkinson's Disease (PD) are two of the most prevalent neurodegenerative disorders in the world. While cerebrospinal fluid (CSF) has been widely used to study AD and PD biomarkers, sampling of CSF is more invasive compared to blood. However, due to differences in analyte abundance and limited assay sensitivity, correlating measurements in blood and CSF using traditional ELISAs has been challenging. High-sensitivity immunoassay technologies, such as Single Molecule Counting (SMC™), can help address the challenge of low abundant protein studies by improving the lower limits of quantification (LLOQ) while maintaining dynamic range to enable concurrent measurement of low and high abundance samples.



Description	Cat. No.
SMC™ Human phospho- $\alpha$ -synuclein (S129) High Sensitivity Immunoassay Kit	03-0188-00
SMC™ Human phospho-Tau (T181) High Sensitivity Immunoassay Kit	03-0184-00
SMC™ Human total $\alpha$ -synuclein High Sensitivity Immunoassay Kit	Coming Soon!

## Achieving breakthroughs in a time of great need: Let SMC™ technology aid your crucial COVID-19 studies

Amidst the COVID-19 pandemic that is impacting public health on a global scale, researchers are working tirelessly to achieve a better understanding of the novel coronavirus. Whether you are interested in understanding early inflammatory cytokine responses post-infection, or temporal profiling SARS-CoV2 specific antibody responses, Single Molecule Counting (SMC™) technology provides the tools you need to generate data from your crucial experiments in a way not possible using traditional immunoassay platforms.



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

Description	Cat. No.
SMC™ SARS-CoV2 RBD IgG Kit	03-0193-00
SMC™ SARS-CoV2 S1 IgA Kit	Coming Soon!
SMC™ SARS-CoV2 Antigen-Specific IgM Kit	Coming Soon!
SMC™ Human IL-6 High Sensitivity Immunoassay Kit	03-0155-00
SMC™ Human TNF $\alpha$ High Sensitivity Immunoassay Kit	03-0163-00
SMC™ Human IFN $\gamma$ 2 High Sensitivity Immunoassay Kit	03-0186-00
SMC™ Human IL-4 High Sensitivity Immunoassay Kit	03-0161-00

# Develop your own SMC™ Homebrew Assay with 1:1 Training and Customized Kits

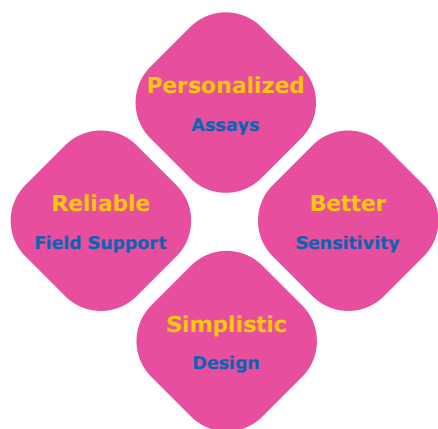
Take advantage of our ultrasensitive Single Molecule Counting (SMC™) technology while developing your own application-specific immunoassays in either bead or plate format. Our assay development and optimization kits provide everything you need to build your own high performing SMC™ immunoassay for use with the SMCxPRO™ system. Use our platform to customize the assay required to accelerate your research. We offer hands-on assay development training for SMC™ at your facility or one of our global training centers.



## Utilize 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, to critical diseases. Assessing the immunogenicity of a compound occurs via the detection of anti-drug antibodies (ADA), specifically IgG, IgM and IgE. FDA guidelines continue to stress the importance of high sensitivity as this leads to earlier detection of a primary immune response which is essential for patient safety.

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 validate. The SMC™ Immunogenicity bead-based assay development kit includes all you need to develop and validate 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, validate and also train end-users to fully utilize the platform.



Description	Cat. No.
SMC™ Bead-based Assay Development Kit (5 plates)	03-0178-00
SMC™ Plate-based Assay Development Kit (5 plates)	03-0179-00
SMC™ Assay Development Training – 3 days	96-2024-00
SMC™ Assay Development Training – extra day	96-2025-00
SMC™ Bead Based Immunoassay Development Kit	03-0078-00
SMC™ Plate Based Immunoassay Development Kit	03-0128-00
SMC™ Detection Labeling Kit	03-0076-02
SMC™ Capture Labeling Kit	03-0077-02
SMC™ Assay Buffer Optimization Kit	03-0122-00
SMC™ Immunogenicity Bead Based Assay Development Kit	03-0175-00
384-well Bar-coded Aurora Plate (Case of 32 plates)	ABB2-10160A
384-well Aurora Plate (Case of 32 plates)	ABB2-00160A
One 384-well Aurora plate w/ 3 plate seals	02-1008-00

# Expert Custom Assays & Sample Testing (CAST) 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 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, 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. Ideal for bringing your assay in house.

## SMCxPlore Assay Conversion to SMC™:

With access to over 600 proven antibody pairs, let us develop a SMC™ assay that isn't currently available.

## SMCxPlore Proof of Concept Sample Testing:

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



# SMCxPRO™ Immunoassay System and Services

The SMCxPRO™ immunoassay system is a compact affordable system for ultra-sensitive 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 an low maintenance affordable solution where ultra-high sensitivity is required.



SMCxPRO™ & 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
Jitterbug Plate Shaker	70-0009-00

**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 30fM 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 your SMC™ Assays

## BioTek® 405™ TS SMC™ Magnetic 96-well Washer



In partnership with BioTek®, 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™ TS model offers an easy-to-use and glove touchable screen.

Description	Cat. No.
BioTek® 405™ TS SMC™ Magnetic 96-well Washer Complete with Touch Screen and Ultrasonic Cleaning	95-0004-05

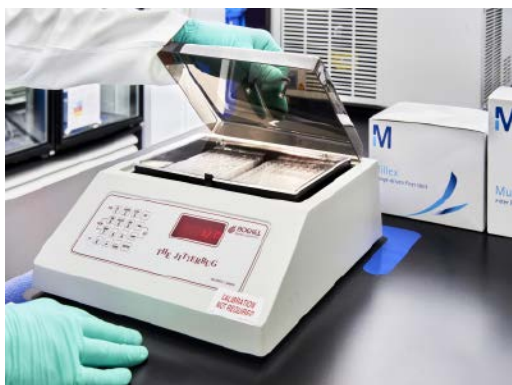
## SMC™ Plate Washer Evaluation Kit



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 in an abbreviated workflow. This allows you to assess the performance of your plate washer to run your assay with confidence.

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

## Boekel Scientific Jitterbug, 130000, Heated Microplate Shaker (115V)



The microplate shaker is temperature controlled and ideal for immunoassays like SMC™. Includes an inner lid to eliminate light and reduce the risk of contamination.

Description	Cat. No.
Boekel Jitterbug Heated Microplate Shaker (115V)	70-0009-00
Boekel Jitterbug Heated Microplate Shaker (230V)	70-0009-00A

# Millipore Brand ELISAs

## Metabolic/Endocrine ELISAs

Our menu of metabolic and endocrine ELISAs allows 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
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
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	EZRMNPY-27K
PEDF (Pigment Epithelium-Derived Factor)	Human	0.9–62.5 ng/mL	0.9 ng/mL	50 µL	CYT420
Phosphorylated Neurofilament, (pNF-H) Sandwich	Multi-Species	0.0293–15 ng/mL	0.0585 ng/mL	1–10 µL	NS170
S100B	Human	2.7–2000 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 > 1,800 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. With such a large number of ELISAs, it is impossible to list them all on a single page, so search your target at [SigmaAldrich.com](http://SigmaAldrich.com). To view protocols and performance parameters, type “sample” into the **Certificate of Analysis** box and open the PDF.

## 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 validation
- Upcharge may apply
- EIA
  - Competitive ELISA
- Cell-Based Phosphorylation ELISA
  - For use on cell lysates to detect phosphorylation events

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



# ELISA Reading and Washing Equipment in Partnership with BioTek®

Supporting our collection of over 1800 ELISA products, we are pleased to introduce the 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 EMD Millipore and Sigma-Aldrich ELISAs

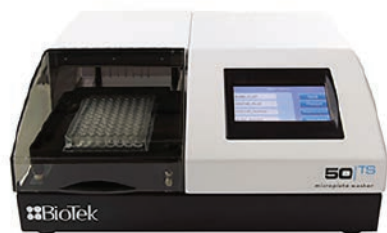


- Precise, accurate and versatile, used for many applications, including ELISA, protein and other end-point assays, plus kinetics and cell-based assays
- Software options: Basic, Gen 5 and Gen 5 Secure
- Flexible filter options; 450nm, 590nm, 630nm and 750nm as standard
- Optional absorbance test NIST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

Description	Cat. No.
BioTek® 800 TS Absorbance Reader, Gen 5 Software	40-006
BioTek® 800 TS Absorbance Reader, Gen 5 Secure	40-007
BioTek® 800 TS Absorbance Reader, Basic	40-300

## 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

# MILLIPLEX® Analyte Species Index

Analyte	Species	Analyte	Species	Analyte	Species
<b>4-6</b>		B7-H6	H	Complement C1q	H
4-1BBL/TNFSF9	H	BAD (total)	H	Complement C2	H
4E-BP1 (total)	H,M,R	BAD (Ser112)	H,M	Complement C3	H
4E-BP1 (Thr37/46)	H,M,R	BAFF/Blys	H	Complement C3b/iC3b	H
5'-NT/CD73	H,R	BAFF/Blys (autoantibody)	H	Complement C4	H
6Ckine/CCL21/Exodus-2	H,M	BAX (total)	H	Complement C4b	H
		BCA-1/CXCL13	H	Complement C5	H
<b>A</b>		Bcl-2 (total)	H	Complement C5a	H
α 1-Acid Glycoprotein (AGP)	H,M,R	Bcl-2 (Ser70)	H	Complement Factor B	H
α-1-Antitrypsin (A1AT)	H	Bcl-xL (total)	H	Complement Factor H	H
α-1 Microglobulin	H	Bcl-xL/BAD (interaction)	H	Complement Factor I	H
α-2 Macroglobulin (A2M)	H,M,R	BDNF	H,M,R	Connective Tissue Growth Factor (CTGF)	R
α-Fetoprotein (AFP)	H	Betacellulin	M	Contactin-1	H
α-MSH	H,M,R	BIM	H	Corticosterone	R
α-Synuclein	H	Blk (Tyr389)	H	Cortisol	H,Mul
ACTH	C,H,M,NHP,R	BMP-9	H	CRAF (Ser338)	H,M,R
Active Caspase 8 (total)	H	BNP	H	Creatine Kinase Muscle (CKM)	R
Active Caspase 9 (total)	H	BRAF (Ser446)	H,M,R	CREB (Ser133)	H,M,R
ADAMTS13	H	BRAK/CXCL14	H	CREB (total)	H,M,R
Adiponectin	H,M,R	BTLA	H	CTACK/CCL27	H,M
Adipsin/Factor D	H,M			CTAG1B/NY-ESO-1 (autoantibody)	H
Agouti-Related Protein (AgRP)	H,NHP	<b>C</b>		CTLA-4/CD152	H
ALK-1 (soluble)	M	c-Jun (Ser73)	H,M,R	CXCL6/GCP-2	H
Akt/PKB (Ser473)	H,M,R	c-Kit (panTyr)	H	CXCL16	H,M
Akt/PKB (total)	H,M,R	c-Kit/SCFR (soluble)	H	CYFRA21-1	H
Akt1 (Ser473)	H,M,R	c-Met/HGFR (panTyr)	H	Cystatin C	C,H,M,R
Akt1 (total)	H,M,R	c-Myc (total)	H		
Akt2 (Ser474)	H,M,R	C-Peptide	H,NHP	<b>D</b>	
Akt2 (total)	H,M,R	C-Peptide 2	M,R	D-dimer	H
Akt3 (Ser472)	H,M,R	C-Reactive Protein (CRP)	H,M	DKK1	H,M,R
Akt3 (total)	H,M,R	CA125	H	DPP4	H
Albumin	C,H,R	CA15-3	H		
ALDH1A1	H	CA19-9	H	<b>E</b>	
Amphiregulin	M	Calbindin	H	E-Cadherin	H
Amylin (active)	H,M,NHP,R	Carbonic Anhydrase 9 (CA9)	H	EGF	H,M,R
Amylin (total)	C,H	Cardiac Troponin I (cTnI)	R	EGFR/HER1/ErbB1 (soluble)	H
Amyloid beta 1-40 (Aβ 1-40)	H,M	Cardiac Troponin T (cTnT)	R	EGFR2/Her2/ErbB2 (soluble)	H
Amyloid beta 1-42 (Aβ 1-42)	H,M	Cathepsin D	H	EGFR3/Her3/ErbB3 (soluble)	H
Angiogenin (ANG)	H	Caveolin-1 (CAV-1)	R	eIF-4B (Ser422)	H,M,R
Angiopoietin-2	H,M	CCL28	H	eIF-4E (Ser209)	H,M,R
Angiostatin/Kringle	H	CCNB1/Cyclin B1 (autoantibody)	H	eIF-4G (Ser1108)	H,M,R
Angiotensinogen (AGT)	H	CD3ε (panTyr)	H	eIF2a (Ser51)	H,M,R
ANGPTL3	H	CD14 (soluble)	H	ENA-78/CXCL5	H
ANGPTL4	H	CD25/IL-2Rα	H	Endocan-1 (ESM-1)	H,M
ANGPTL6/AGF	H	CD27	H	Endoglin	H,M
Antithrombin III	H	CD28	H	Endostatin	H
Apelin	H	CD30 (soluble)	H,M	Endothelin-1	H,M
Apolipoprotein AI (Apo AI)	H	CD30/TNFRSF8	H	ENO1 (autoantibody)	H
Apolipoprotein AII (Apo AII)	H	CD31/PECAM-1 (soluble)	H,M	Eotaxin/CCL11	E,H,M,NHP,R
Apolipoprotein B (Apo B)	H	CD40	H	Eotaxin-2/CCL24/MIP1F-2	H
Apolipoprotein CII (Apo CII)	H	CD40L (soluble)	H,M,NHP	Eotaxin-3/CCL26	H
Apolipoprotein CIII (Apo CIII)	H	CD44	H	EpCAM	H
Apolipoprotein E (Apo E)	H	CD80/B7-1	H	Erythropoietin (EPO)	H,M,R
ApoE4	H	CD86/B7-2	H	ErbB1/EGFR (panTyr)	H
APRIL	H	CD137/4-1BB/TNFRSF9 (soluble)	H,M,NHP	ErbB2/HER2 (panTyr)	H
Arginase-1 (ARG1)	H,R	CD226/DNAM-1	H	ErbB3/HER3 (panTyr)	H
ATF2 (Thr71)	H,M	CEA	H	ErbB4/HER4 (panTyr)	H
ATR (total)	H	CENP-A (Centromere Protein A) (autoantibody)	H	Erk/MAPK 1/2 (Thr185/Tyr187)	H,M,R
AXL (soluble)	H	CENP-B (Centromere Protein B) (autoantibody)	H	Erk/MAPK 1/2 (total)	H,M,R
		Chk1 (Ser345)	H,M,R	E-Selectin (soluble)	H,M,R
<b>B</b>		Chk2 (Thr68)	H	Estradiol	Mul
β-2-Microglobulin	C,H,M,R	CK-MB	H	Extracellular Matrix Protein 1 (ECM1)	H
β-Endorphin	H,M,R	Clusterin	C,H,M,R		
β2-Glycoprotein (autoantibody)	H	CNTF	H,NHP	<b>F</b>	
β-Tubulin (total)	H,M,R	Collagen IV	H	FABP1	H
B7-H2/ICOSL	H	C1q (autoantibody)	H	FABP3	H,R
B7-H3/CD276	H			FABP4	H
B7-H4/VTCN1	H			FADD (Ser194)	H
B7-H5/VISTA	H				



# MILLIPLEX® Analyte Species Index (continued)

Analyte	Species	Analyte	Species	Analyte	Species
Leucine-rich alpha-2-glycoprotein 1 (LRG1)	H	Nectin-4	H	PSA (total)	H
Leukemia Inhibitory Factor (LIF)	H,M,R	Neurogranin (NRGN)	H	P-Selectin (soluble)	H,M
LH	C,H,M,NHP,R	Neuron-specific Enolase (NSE)	H	PTEN (total)	H,M,R
LIGHT	H,M	Neuropilin-1 (soluble)	H	PTEN (Ser380)	H,M,R
LIX/CXCL6/GCP-2	H,M,R	Neurotensin	H,M,R	PTH	H,R
L-Selectin (soluble)	H	Neutrophil Elastase-2 (ELA2)	H	PVR/CD155	H
Lymphotactin/XCL1	H	NFκB (total)	H,M,R	PYY (total)	C,H,M,NHP,R
Lyn (Tyr397)	H,R	NFκB (Ser536)	H,M		
		NGAL/Lipocalin-2	C,H,M,R	<b>R</b>	
<b>M</b>		NGF	H	RAGE (soluble)	H,M
Mannose-Binding Lectin (MBL)	H	Notch1	M	RANKL	H
MCAM/MUC18/sCD146	H	NOXA/Mcl-1 (interaction)	H	RANTES/CCL5	E,F,G,H,M,NHP,R
Mcl-1/BIM (interaction)	H	NT proBNP	H	Ras (total)	H
Mcl-1 (total)	H			RasG12D (total)	H
MCP-1/CCL2	B,C,E,F,H,M,NHP,R	<b>O</b>		RasG12V (total)	H
MCP-2/CCL8	H	Oncostatin-M (OSM)	H,M	RBP4	C,H
MCP-3/CCL7	H	Osteoactivin	H	Renin	H,M
MCP-4/CCL13	H	Osteocalcin (OC)	H	Resistin	H,M
MCP-5/CCL12	M	Osteocrin (OSTN)/Musclin	M,R	Ribosomal P (autoantibody)	H
M-CSF	G,H,M	Osteonectin/SPARC	H,M,R	RNP (Ribonucleoprotein) (autoantibody)	H
M-CSFR (panTyr)	H	Osteopontin (OPN)	C,H,M,R	RNP/Smith (RNP/Sm) (autoantibody)	H
MDC/CCL22	H,M	Osteoprotegerin (OPG)	H,M,R	RPS6 (Ser235/Ser236)	H,M,R
MDH1	H	OX40/CD134	H	RPS6 (total)	H,M,R
MDM2 (total)	H,M,R	Oxytocin	H,M,R		
MEK1 (Ser222)	H,M,R	<b>P</b>		<b>S</b>	
Melanoma Inhibitory Activity Protein (MIA)	H	P16-INK4a (autoantibody)	H	S100B	H
Melatonin	H,R	p21 (total)	H	SARS-CoV-2 N	H
Mesothelin	H	p38/SAPK2A/B (Thr180/Tyr182)	H,M,R	SARS-CoV-2 RBD	H
Mi-2 (autoantibody)	H	p38/SAPK2A/B (total)	H,M,R	SARS-CoV-2 Spike S1	H
MICA	H	p53 (autoantibody)	H	SARS-CoV-2 Spike S2	H
MICB	H	p53 (Ser15)	H	SCF	F,H
Midkine	H	p53 (Ser46)	H	Scf-70 (autoantibody)	H
MIF	H	p70S6 Kinase (total)	H,M,R	Sclerostin (SOST)	H,M,R
MIG/CXCL9	H,M	p70S6 Kinase (Thr389/412)	H,M,R	SDF-1/CXCL12	F,H,M
MIP-1α/CCL3	B,H,M,NHP,O,R	PAI-1 (total)	H,M,R	SDH	H,R
MIP-1β/CCL4	B,G,H,M,NHP,O	Pancreatic Polypeptide (PP)		Secretin	H,M
MIP-1δ/MIP-5/CCL15	H			Serum Amyloid A (SAA)	H
MIP-2/CXCL2	M,R	PARK5/Uchl1	H	Serum Amyloid P (SAP)	H,M
MIP-3α/CCL20	G,H,M,NHP	PARK7/DJ1 (Parkinson's Disease Protein 7)	H	Sex Hormone Binding Globulin (SHBG)	H
MIP-3β/CCL19	H,M	PCNA (Proliferating Cell Nuclear Antigen A) (autoantibody)	H	Siglec-7	H
MIP-4/PARC/CCL18	H	PD-1	H	Siglec-9	H
MMP-1	H	PDGF-AA	H	Sm (autoantibody)	H
MMP-2	H,M	PDGF-AB/BB	H	SMAD2 (Ser465/467)	H,M,R
MMP-3	H,M	PDGF-BB	F	SMAD3 (Ser423/425)	H,M,R
MMP-7	H	PDGFRα (panTyr)	H,M,R	SMAD4 (total)	H,M,R
MMP-8	H,M	PDGFRβ (panTyr)	H	SOX2 (autoantibody)	H
MMP-9	H	PD-L1	H	Src (Tyr419)	H,M,R
MMP-10	H	PD-L2	H	SSA/Ro52 (Sjögren's Syndrome-related antigen A/Ro52 kDa) (autoantibody)	H
MMP-12	H,M	PEDF	H	SSA/Ro60 (Sjögren's Syndrome-related antigen A/Ro60 kDa) (autoantibody)	H
MMP-13	H	Pentraxin-3 (PTX3)	H	SB/La (Sjögren's Syndrome-related antigen B/La) (autoantibody)	H
MPIF/CCL23	H	Perforin	H,NHP	STAT1 (Tyr701)	H,M
MSK1 (Ser212)	H,M	Periostin	H	STAT2 (Tyr690)	H
mTOR (Ser2448)	H,M,R	Progranulin (pGRN)	H	STAT3 (total)	H,M,R
mTOR (total)	H,M,R	PL-12 (Alanyl-tRNA Synthetase) (autoantibody)	H	STAT3 (Ser727)	H,M,R
Mucin-1 (MUC1) (autoantibody)	H	Placental Growth Factor 2	M	STAT3 (Tyr705)	H,M,R
Myeloperoxidase (MPO)	H	Placental Growth Factor (PLGF)	H	STAT5A/B (total)	H,M,R
Myeloperoxidase (MPO) (autoantibody)	H	Platelet Factor 4 (PF4)/CXCL4	H	STAT5A/B (Tyr694/699)	H,M,R
Myoglobin	H	PM/Sci 100 (autoantibody)	H	STAT6 (Tyr641)	H
Myosin Light Chain 3 (MYL3)	R	PRNP (Prion Protein)	H	Substance P	H,M,R
Myostatin/GDF8	H,M,R	Progesterone	Mul	Superoxide Dismutase 1 (soluble) (sSOD1)	H
<b>N</b>		Prolactin	C,H,M,R		
NAP-2/CXCL7	H	ProMMP-9	M		
NCAM (soluble)	H	Proteinase 3 (autoantibody)	H		
NCAM1/L1CAM/CD171	H	PSA (free)	H		
Nectin-2	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
Superoxide Dismutase 2 (soluble) (sSOD2)	H	TIM-3	H	<b>U</b>	
Survivin/BIRC5 (autoantibody)	H	TIMP-1	H,M,R	ucMGP	H
Syk (panTyr)	H	TIMP-2	H	uPAR (soluble)/CD87	H
<b>T</b>		TIMP-3	H	Uromodulin	H
T3	Mul,R	TIMP-4	H	<b>V</b>	
T4	Mul,R	Tissue Factor (TF)	H	VCAM-1 (soluble)	H
TARC/CCL17	H,M	TLR-2	H	VEGF	G,R
Tau (Total)	H	TNFR1 (total)	H	VEGF-A	B,H,M,NHP,O,R
Tau (Thr181)	H	TNFa	B,C,E,F,H,M,NHP,O,Por,R	VEGF-C	H,M
Tenascin-C (TN-C)	H	TNFa (autoantibody)	H	VEGF-D	H,M
Testosterone	Mul	TNFβ/Lymphotoxin-α (LTA)	H,M,NHP	VEGFR1/Flt-1 (panTyr)	H
TFF-3	C,H	TNF RI (soluble) (sTNFR1)	H,M	VEGFR1/Flt-1 (soluble)	H,M
TGFa	H,NHP	TNF RII (soluble) (sTNFR2)	H,M	VEGFR2/KDR/Flk-1 (panTyr)	H
TGFβ1	Mul	TPO	H	VEGFR2/KDR/Flk-1 (soluble)	H,M
TGFβ2	Mul	TRAIL/TNFSF10	H	VEGFR3/Flt-4 (panTyr)	H,M,R
TGFβ3	Mul	Transglutaminase 2 (TGM2)	H	VEGFR3/Flt-4 (soluble)	H,M
TGFβRII (total)	H	TRAP5	H	Vitamin D Binding Protein	H
Thrombomodulin	H,M	TREM2	H	<b>Y</b>	
Thrombospondin-1 (TSP-1)	H	Troponin I (TnI)	H,M	Yes (Tyr421)	H,M,R
Thrombospondin-2 (TSP-2)	H	Troponin T (TnT)	H,M	YKL40/CHI3L1	H
TIE1 (panTyr)	H	TSC2 (total)	H,M,R	<b>Z</b>	
TIE2 (panTyr)	H	TSC2 (Ser939)	H,M,R	ZAP-70 (panTyr)	H
Tie-2 (soluble)	H	TSH	C,H,M,NHP,R		
		TSLP	H		
		TWEAK	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. 22-26; M/Mouse pp. 27-29; NHP/Non-Human Primate p. 27; R/Rat pp. 29-30; All other species p. 31; Cell Signaling kits pp. 32-35



# HUMAN

## Immunology

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

● (Cat. No. HCYTA-60K)

● (Cat. No. HCYTA-60K-PX38) ◆

● (Cat. No. HCYTA-60K-PXBK38) ◆

● (Cat. No. HCYTA-60K-PX48)

● (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 I

● (Cat. No. HCYTOMAG-60K)

● (Cat. No. HCYTMAG-60K-PX29)

● (Bulk Cat. No. HCYTMAG60PMX29BK)

● (Cat. No. HCYTMAG-60K-PX30) ◆

● (Bulk Cat. No. HCYTMAG60PMX30BK) ◆

● (Cat. No. HCYTMAG-60K-PX38)

● (Bulk Cat. No. HCYTMAG60PMX38BK)

● (Cat. No. HCYTMAG-60K-PX41)

● (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 Cytokine/Chemokine Panel II

● (Cat. No. HCYP2MAG-62K)

● (Cat. No. HCP2MAG-62K-PX23)

● (Bulk Cat. No. HCP2MAG62KPX23BK)

6Ckine/CCL21/ Exodus-2	IL-28A/IFNA2
BCA-1/CXCL13	IL-33/NF-HEV (mature)
CTACK/CCL27	LIF
ENA-78/CXCL5	MCP-2/CCL8
Eotaxin-2/CCL24/ MPIF-2	MCP-4/CCL13
Eotaxin-3/CCL26	MIP-1 $\delta$ /MIP-5/CCL15
I-309/CCL1	SCF
IL-16	SDF-1/CXCL12
IL-20	TARC/CCL17
IL-21	TPO
IL-23	TRAIL/TNFSF10
	TSLP

### Human Cytokine/Chemokine Panel III

(Cat. No. HCYP3MAG-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
LIX/CXCL6/GCP-2	NAP-2/CXCL7 ▲
Lymphotoxin/XCL1	

### Human Cytokine/Chemokine Panel IV

● (Cat. No. HCYP4MAG-64K)

● (Cat. No. HCY4MG-64K-PX20)

● (Bulk Cat. No. HCP4MG64KPX20BK)

BAFF/Blys	IL-28B/IFNA3
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)

● (Cat. No. HSTCMAG28SPMX13) ◆

● (Bulk Cat. No. HSTCMAG28SPMX13BK) ◆

● (Cat. No. HSTCMAG28SPMX21)

● (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)

● (Cat. No. HSTCMAG384-PX21)

● (Bulk Cat. No. HSTCMAG384PX21BK)

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

## Human Cytokine 48-Plex: Larger and Customizable!

The MILLIPLEX® Human Cytokine/Chemokine/Growth Factor Panel A combines tests for 48 individual immune factors that previously have not been together in a single panel. For more information, see our **Application Note**.

**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-3a/CCL20
IL-13	TNF $\alpha$
IL-15	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)
IL-17A/CTLA8	

**Human CD8+ T Cell**

17 (Cat. No. HCD8MAG-15K)

17 (Cat. No. HCD8MAG15K17PMX)

17 (Bulk Cat. No. HCD8MAG15KPX17BK)

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

**Human Soluble Cytokine Receptor**

(Cat. No. HSCRMAG-32K)

14 (Cat. No. HSCRMAG32KPX14)

14 (Bulk Cat. No. HSCRMAG32PMX14BK)

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

**Human Complement Panel 1**

(Cat. No. HCMP1MAG-19K)

Adipsin/Factor D	C5a
C2	Factor I
C4b	Mannose-binding Lectin (MBL)
C5	

**Human Complement Panel 2**

(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

**Multi-Species TGF $\beta$  – Singleplex #**

(Cat. No. TGFBMAG-64K-01)

(Bulk Cat. No. TGFBMAG-64K-01BK)

TGF $\beta$ 1
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**Multi-Species TGF $\beta$  – 3 Plex ▼**

(Cat. No. TGFBMAG-64K-03) #

**NON-CONFIGURABLE KIT**

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

**Immune Response****Human Autoimmune Autoantibody \*\***

(Cat. No. HAIAB-10K)

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

**Human Cytokine Autoantibody \*\***

(Cat. No. HCYTAAB-17K)

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	

**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; autoantibody levels are reported as MFIs

● Serum/Plasma only

★ Tissue Culture samples only

^ Competitive assay format

⊙ Available for custom premix

◦ Analyte requires a different sample dilution from others in panel

○ Analyte cannot be measured in serum

# Requires sample acidification

§ Analyte cannot be measured in plasma

u Urine only

## Human Skin (Skin extracts only)

(Cat. No. SKINMAG-50K)

Cortisol ^	Involucrin
Human Serum Albumin (HSA)	Keratin-1,10 Keratin-6

## Human Immunoglobulin Isotyping

 (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 **NEW** \*\*

(Cat. No. HC19SERA1-85K)

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 **NEW** \*\*

(Cat. No. HC19SERG1-85K)

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 **NEW** \*\*

(Cat. No. HC19SERM1-85K)

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

## Metabolism/ Endocrinology

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

(Cat. No. HADK1MAG-61K)

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

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

(Cat. No. HADK2MAG-61K)

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


## Human Adipocyte (Cell culture samples)

(Cat. No. HADCYMAG-61K)

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

## Human Diabetes ▼

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

 (Bulk Cat. No. HDIAB34KPMX5BK)
**NON-CONFIGURABLE KIT**

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

## Human Metabolic Hormone V3 **NEW**

(Cat. No. HMH3-34K)

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

## 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) ▶	TNFα
Glucagon ▶	

## 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)

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

## Human IGF Binding Protein ▶

(Cat. No. HIGFBMAG-53K)

IGFBP1	IGFBP5
IGFBP2	IGFBP6
IGFBP3*	IGFBP7
IGFBP4	

## Human IGF ■

(Cat. No. HIGFMAG-52K)

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

(Cat. No. HPTP1MAG-66K)

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

## Multi-Species Hormone ■ ^

(Cat. No. MSHMAG-21K)

Cortisol	Testosterone
Estradiol	T3
Progesterone	T4

## Cardiovascular

### Human CVD Panel 1

(Cat. No. HCVD1MAG-67K)

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

### Human CVD Panel 2

(Cat. No. HCVD2MAG-67K)

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

### Human CVD Panel 3 (Acute Phase)

(Cat. No. HCVD3MAG-67K)

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



**Human CVD Panel 4**

(Cat. No. HCVD4MAG-67K)

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

**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)

① (Cat. No. HCKP1-11K-PX17)

① (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-2Ra	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)

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	Extracellular Matrix Protein 1 (ECM1)
Complement Factor H (CFH)	Vitamin D Binding Protein

**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	NCAML1/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. HAG1MAG-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-6Ra
sAXL	sNeuropilin-1 (sNRP-1)
sCD31/sPECAM-1	Osteopontin (OPN)
sc-Kit/sStem Cell Factor Receptor (SCFR)	PDGF-AB/BB
sE-Selectin	Tenascin-C (TN-C)
sEGFR/sHER1/sErbB1	Thrombospondin-2 (TSP-2)
sHER2/sEGFR2/sErbB2	sTIE-2
sHER3/sEGFR3/sErbB3	suPAR
sHGF/sc-Met	sVEGFR1/sFlt-1
	sVEGFR2/sKDR/sFlk-1
	sVEGFR3/sFlt-4

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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; autoantibody levels are reported as MFIs

● 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

## 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)

$\alpha$ -Synuclein	PARK5/UCHL1
Glial Fibrillary Acidic Protein (GFAP)	PARK7/DJ1
Neuron-specific Enolase (NSE)	Transglutaminase 2 (TGM2)

### Human Neuroscience Panel 2

(Cat. No. HNS2MAG-95K)

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

### Human Neurodegenerative Disease Panel 1

(Cat. No. HNDG1MAG-36K)

$\alpha$ -2-Macroglobulin	Complement Factor C3
Apo AI	Complement Factor H (CFH)
Apo CIII	
Apo E	

### Human Neurodegenerative Disease Panel 2

(Cat. No. HNDG2MAG-36K)

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

### Human Neurodegenerative Disease Panel 3

(Cat. No. HNDG3MAG-36K)

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

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

(Cat. No. HNDG4MAG-36K)

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

### Human Neurological Disorders Panel 3

(Cat. No. HND3MAG-39K)

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

### Human Neuropeptide ■ ^

(Cat. No. HNP MAG-35K)

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

### Human Circadian Stress ■ ^

(Cat. No. HNC SMAG-35K)

Cortisol	Melatonin
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## Toxicity

### Human Kidney Injury Panel 1 (Urine samples)

(Cat. No. HKI1MAG-99K)

Calbindin	KIM-1
Collagen IV	Osteoactivin
FABP1	Renin
GSTa	TFF-3
IP-10/CXCL10	TIMP-1

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

(Cat. No. HKI2MAG-99K)

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

### Human Kidney Injury Panel 3 (Urine samples)

(Cat. No. HKI3MAG-99K)

$\beta$ -2-Microglobulin	Uromodulin
RBP4	

### 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)

$\alpha$ -1-Microglobulin	Osteoactivin
Collagen IV	TIMP-1
NGAL/Lipocalin-2	Uromodulin

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

(Cat. No. HKI6MAG-99K)

$\beta$ -2-Microglobulin	Cystatin C
Clusterin	RBP4

### Human Liver Injury

(Cat. No. HLI NJMAG-75K)

5'NT/CD73	MDH1
ARG1	SDH
GSTa	

## Need Some Advice on Running Assays?

Visit our [MILLIPLEX® FAQs page](#) and download our Tips and Tricks brochure to perfect your methods.

## PRIMATE

## Immunology

## Non-Human Primate Cytokine/Chemokine Panel 1

- ☐ (Cat. No. PRCYTOMAG-40K)  
 23 (Cat. No. PCYTMG-40K-PX23)  
 23 (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. PRCYT2MAG40PMX24BK)  
 25 (Cat. No. PRCYT2MAG40K-PX25)  
 25 (Bulk Cat. No. PRCYT2MAG40PMX25BK)

sCD137/4-1BB/ TNFRSF9	IL-17E/IL-25 IL-21
Eotaxin/CCL11	IL-22
sFasL	IL-23
FGF-2/FGF-basic	IL-28A/IFN $\lambda$ 2
Fractalkine/CX3CL1	IL-31
Granzyme A	IL-33/NF-HEV (mature)
Granzyme B	
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	

Multi-Species TGF $\beta$  – Singleplex #

- (Cat. No. TGFBMAG-64K-01)  
 (Bulk Cat. No. TGFBMAG-64K-01BK)

TGF $\beta$ 1
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Multi-Species TGF $\beta$  – 3 Plex ▼#

- (Cat. No. TGFBMAG-64K-03)

**NON-CONFIGURABLE KIT**

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

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

## Multi-Species Hormone ■ ▲

- (Cat. No. MSHMAG-21K)

Cortisol	Testosterone
Estradiol	T3
Progesterone	T4

## 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-73KPX)  
 15 (Bulk Cat. No. MECY2MAG73KPXBK)

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-70KPMXBK)

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 $\alpha$

## 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; autoantibody levels are reported as MFIs

● 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 Th17**

-  (Cat. No. MTH17MAG-47K)  
 (Cat. No. MT17MAG47K-PX25)  
 (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-3 $\alpha$ /CCL20
IL-13	TNF $\alpha$
IL-15	TNF $\beta$ /Lymphotoxin- $\alpha$ (LTA)
IL-17A/CTLA8	

**Mouse CD8+ T Cell**

-  (Cat. No. MCD8MAG-48K)  
 (Cat. No. MCD8MAG48K-PX15)  
 (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/sFit-1
sIL-2R $\alpha$	sVEGFR2/sKDR/sFlk-1
sIL-4R	sVEGFR3/sFit-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	

**Multi-Species TGF $\beta$  – Singleplex**

- (Cat. No. TGFBMAG-64K-01)  
(Bulk Cat. No. TGFBMAG-64K-01BK)

TGF $\beta$ 1
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**Multi-Species TGF $\beta$  – 3 Plex ▼**

- (Cat. No. TGFBMAG-64K-03)

**NON-CONFIGURABLE KIT**

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

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

**Mouse Myokine**

- (Cat. No. MMYOMAG-74K)

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

**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	

**Multi-Species Hormone ■ ^**

- (Cat. No. MSHMAG-21K)

Cortisol	Testosterone
Estradiol	T3
Progesterone	T4

## Cardiovascular

### Mouse CVD Panel 1

(Cat. No. MCVD1MAG-77K)

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

### Mouse CVD Panel 2

(Cat. No. MCVD2MAG-77K)

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

### 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)

## Bone

### Mouse Bone

(Cat. No. MBNMAG-41K)

ACTH	Leptin
DKK1	Osteoprotegerin (OPG)
FGF-23	Sclerostin (SOST)
IL-6	TNFα
Insulin	

## Cancer

### Mouse Angiogenesis / Growth Factor Panel 1

(Cat. No. MAGPMAG-24K)

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

## Neuroscience

### Mouse Amyloid Beta

(Cat. No. MABMAG-83K)

Amyloid beta 1-40	Amyloid beta 1-42
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### Mouse Neuropeptide ■ ▲

(Cat. No. RMNPMAG-83K)

α-MSH	Oxytocin
β-Endorphin	Substance P
Neurotensin	

## Toxicity

### Mouse Kidney Injury Panel 1

(Cat. No. MKI1MAG-94K)

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

### Mouse Kidney Injury Panel 2

(Cat. No. MKI2MAG-94K)

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

## RAT

## Immunology

### Rat Cytokine/Chemokine

☐ (Cat. No. RECYTMAG-65K)

27 (Cat. No. RECYMAG65K27PMX)

27 (Bulk Cat. No. RECYMAG65PMX27BK)

EGF	IL-10
Eotaxin/CCL11	IL-12 (p70)
Fractalkine/CX3CL1	IL-13
G-CSF	IL-17A/CTLA8
GM-CSF	IL-18
KC/GRO/CINC-1/CXCL1	IP-10/CXCL10
IFN <sub>γ</sub>	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

### Multi-Species TGFβ – Singleplex #

(Cat. No. TGFBMAG-64K-01)

(Bulk Cat. No. TGFBMAG-64K-01BK)

TGFβ1

### Multi-Species TGFβ – 3 Plex ▼ #

(Cat. No. TGFBMAG-64K-03)

**NON-CONFIGURABLE KIT**

TGFβ1	TGFβ3
TGFβ2	

## 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	

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■ Requires sample extraction

\*\* No standard/QC; autoantibody levels are reported as MFIs

● 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

<sup>u</sup> Urine only

**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^	

**Multi-Species Hormone** ■ ^

(Cat. No. MSHMAG-21K)

Cortisol	Testosterone
Estradiol	T3
Progesterone	T4

**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

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

(Cat. No. RV1MAG-26K)

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

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

(Cat. No. RV2MAG-26K)

Adiponectin	sICAM-1
sE-Selectin	

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

(Cat. No. RV3MAG-26K)

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

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

(Cat. No. RBN1MAG-31K)

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

**Neuroscience****Rat Neuropeptide** ■ ^

(Cat. No. RMNPMAG-83K)

α-MSH	Oxytocin
β-Endorphin	Substance P
Neurotensin	

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

(Cat. No. RKTX1MAG-37K)

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

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

(Cat. No. RKTX2MAG-37K)

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

**Rat Liver Injury**

(Cat. No. RLI1MAG-92K)

5'NT/CD73	GSTα
ARG1	SDH
GOT1	

**Vet Medicine and Animal Health Research**

Learn more about our biomarker detection multiplex immunoassays for laboratory, companion and agricultural animal research at [sigmaaldrich.com/vetmed](http://sigmaaldrich.com/vetmed).

# OTHER SPECIES

## 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)
- 13 (Cat. No. CCYTMG-90K-PX13)
- 13 (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

**NEW**

- 📍 (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. EQCYTMG-93KPX23)
- 23 (Cat. No. EQCTMG93KPX23BK)

Eotaxin/CCL11	IL-6
FGF-2/FGF-basic	IL-8/CXCL8
Fractalkine/CX3CL1	IL-10
G-CSF	IL-12 (p70)
GM-CSF	IL-13
GRO	IL-17A/CTLA8
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	

### 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

- 📍 (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

- 📍 (Cat. No. PCYTMAG-23K)
- 13 (Cat. No. PCYTMG-23K-13PX)
- 13 (Bulk Cat. No. PCYTMAG23KPMX13BK)

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	

### Multi-Species TGF $\beta$ – Singleplex #

- (Cat. No. TGFBMAG-64K-01)
- (Bulk Cat. No. TGFBMAG-64K-01BK)

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

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

- (Cat. No. TGFBMAG-64K-03)
- NON-CONFIGURABLE KIT**

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

## 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

### Multi-Species Hormone ■ ▲

- (Cat. No. MSHMAG-21K)

Cortisol	Testosterone
Estradiol	T3
Progesterone	T4

## 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

## 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; autoantibody levels are reported as MFIs
- 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


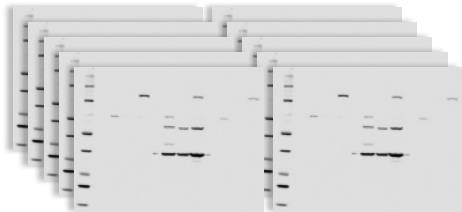
# Cell Signaling MILLIPLEX® Assays

## 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	✓	(Thr389/412)	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	✓		H
Active Caspase 9	✓		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
PDGFRα		(pan Tyr)	H, M, R
PDGFRβ		(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
NFκB		✓ (Ser536)	H, M
p38/SAPK2A/B		✓ (Thr180/Tyr182)	H, M, R
p70S6 Kinase		✓ (Thr389/412)	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
NFκB	✓		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/Ser221)	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 our Ras-Raf Oncoprotein Kit**Download our **AACR 2020 poster** for more information about this unique multiplex kit!

**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

**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

**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

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

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

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

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

**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

**IRS1 Phospho/Total – 2 Plex**(Cat. No. 48-626MAG) AB2 ▼ ●● **NON-CONFIGURABLE KIT**

Analyte	Total	Phosphorylated	
IRS1		✓ (Ser636)	H, M
IRS1	✓		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 (**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) MAPmate™	H, M, R (AB1 & AB2)	<b>46-713MAG</b>
GAPDH (total) MAPmate™	H (AB2)	<b>46-667MAG</b>

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

# Custom MILLIPLEX® Assay Development

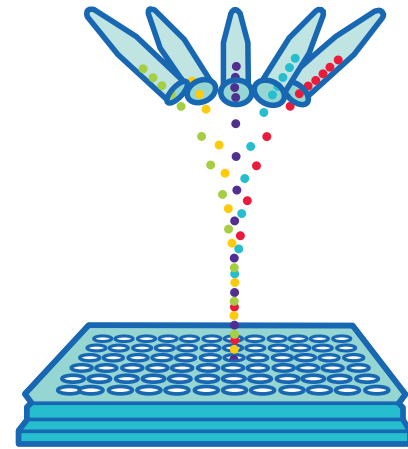
Accelerate your research with customized MILLIPLEX® assays designed for YOUR samples. We offer the following services:

- Develop new analytes
- Multiplex new analytes with existing analytes
- Rearrange existing analytes into new panels
- Design and validate assays on your samples
- Kit bridging for lot-to-lot reproducibility
- Three kit minimum order

Get started today!



Download our new custom menu of services brochure for a complete listing of services at [sigmaaldrich.com/customassay](http://sigmaaldrich.com/customassay)



## STEP 1

Visit either link on this page and “Request Information”; fill in your contact information along with the analyte full protein names, species and samples types; submit your request

## STEP 2

Receive work plan and quotation from sales specialist

## STEP 3

Place purchase order and participate in project kickoff call



SMCxPRO™

## Single analyte detection customized.

When your assays require detection of single analytes only, consider custom assay services for SMCxPRO™ and ELISA plate readers. Leverage sub-picogram detection capabilities of SMCxPRO™ to quantify proteins previously undetectable in samples. For more information on SMCxPRO™, visit [sigmaaldrich.com/customassay](http://sigmaaldrich.com/customassay).



ELISA Plate Reader

# Custom MILLIPLEX® Analytes

CUSTOM

Analyte	Species (Sample Types)
α-1 Antichymotrypsin	H (S/P)
α-2 Antiplasmin	H (S/P)
AGP (α 1-Acid Glycoprotein)	H (U)
Akt/PKB (Ser473)	H, M, R (Lys)**
Akt/PKB (total)	H, M, R (Lys)**
Angiopoetin-1	H (S/P, T)
Anti-Cardiolipin antibody IgA	H (S/P)
Anti-EBV VCA IgG	H (S/P)
Anti-Phosphatidylserine IgG, IgM	H (S/P)
Anti-β2 Glycoprotein IgA, IgG, IgM	H (S/P)
Apolipoprotein A-IV	H (S/P)
APRIL	H (S/P)
Arginase 1	M (S/P)
AXL (s)	M, R (S/P)
BAD (Ser112)	H, M (Lys)**
BAFF	H (S/P)
BCMA (B-cell Maturation Antigen)	H (S/P)
BMP-9	M, R (S/P)
BRD4	H, M, R (Lys)
Calprotectin/S100A8	H (S/P)
Calprotectin/S100A8/S100A9 Heterodimer	H (S/P)
Caspase 3 (Active)	H, M (Lys)**
CBP	H, M, R (Lys)
CD13 Aminopeptidase N	H (S/P)
CD163 (s)	H (S/P)
Ceruloplasmin	H (U)
Cleaved PARP (total)	H (Lys)**
Collagen 1	H (Mul)
CSTB (Cystatin B)	H (S/P)
Elafin	H (S/P)
ERK/MAPK 1/2 (Thr185/Tyr187)	H, M, R (Lys)**
ERK/MAPK 1/2 (total)	H, M, R (Lys)**
Galectin-1	H, M, R (S/P)
Galectin-3	M, R (S/P)
Gas-6	H, M, R (S/P)
Granzyme A	M (S/P)
Gremlin	M, R (S/P)

Analyte	Species (Sample Types)
GRP78	H (S/P)
HGFR/cMET	M, R (S/P)
I-FABP	H (S/P)
IGF-1	M, R (S/P)
IL-18	M, R (S/P)
IL-33R/ST2 (Suppressor of Tumorigenicity 2)	H (S/P)
JNK/SAPK1 (Thr183/Tyr185)	H, M (Lys)**
JNK/SAPK1 (total)	H, M (Lys)**
LCAT (Lecithin-cholesterol Acyltransferase)	H (S/P)
LPGDS (Lipocalin like prostaglandin D synthase)	H (U)
Lysozyme C	H (S/P)
MIP-1γ	M, R (S/P)
mTOR (Ser2448)	H, M, R (Lys)**
mTOR (total)	H, M, R (Lys)**
p300	H, M, R (Lys)
p38/SAPK2A/B (Thr180/Tyr182)	H, M, R (Lys)**
p38/SAPK2A/B (total)	H, M, R (Lys)**
Periostin	M, R (S/P)
PODXL	M, R (S/P)
Prealbumin (Transthyretin)	H (S/P)
Procalcitonin	H, M, R (S/P)
Semaphorin 3A	H (Sup)
SM22/Transgelin	H (S/P)
STAT1 (total)	H, M (Lys)**
STAT1 (Tyr701)	H, M (Lys)**
sTM (s Thrombomodulin)	H (S/P)
Tenascin C	M, R (S/P)
Thyroxine Binding Globulin	H (S/P)
TRAIL	M, R (S/P)
Transferrin	H (U)
Vasopressin	M, R (P)
VE Cadherin/Cadherin 5	H (S/P)
Vitronectin	M, R (S/P)
Wnt-3a	H (S/P, Sup, Lys)
Zinc-α-2 Glycoprotein	H (S/P)

## Species Key

**H** Human  
**M** Mouse  
**R** Rat

## Sample Type Key

**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

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

# 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 more than 40 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

Instrument	FLEXMAP 3D® System	Luminex® 200™ System	MAGPIX® System
Cat. No.	40-014	40-012	40-072
Description	The fastest, most flexible platform.	Gen 2 of the original widely used Luminex® 100™ System.	The newest most cost-effective model for running protein assays.
Software	xPONENT® 4.3	xPONENT® 4.3	xPONENT® 4.3
Optics	Lasers/APDs/PMTs	Lasers/APDs/PMTs	LED/CCD Camera
Hardware	Flow Cytometry-based	Flow Cytometry-based	Fluorescent Imager
Bead Compatibility	Magnetic and nonmagnetic	Magnetic and nonmagnetic	Magnetic
Multiplex Capacity	500	100 (80 for MagPlex®)	50
Read Time (Microtiter Plate)	~20 min/96-well plate ~75 min/384-well plate	~40 min/96-well plate	~60 min/96-well plate
Applications	Protein/Nucleic Acid	Protein/Nucleic Acid	Protein/Nucleic Acid
Dynamic Range	4.5 logs	3.5 logs	3.5 logs
Dimensions including PC (W x D x H)	110 x 62 x 63 cm	115 x 60 x 50 cm	70 x 60 x 50 cm
Weight (Analyzer)	77.1 kg (170 lbs)	49 kg (113 lbs)	17.5 kg (38.5 lbs)
CFR 21 Part 11	✓	✓	✓
Automation	✓	✓	✓
Security	✓	✓	✓
LIS	✓	✓	✓

All systems run on the Luminex® xPONENT® 4.3 data acquisition platform providing a consistent experience, from data input to results, no matter which instrument a scientist uses for their research. This software adapts to fit the capabilities of each platform.

# Instrument and Kit Service, Consumables and Training

As a preferred partner of Luminex® instruments, we supply full service at point of sale and throughout your research. Multi-level service contracts provide cover 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.

## 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

● 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® only

## Consumables

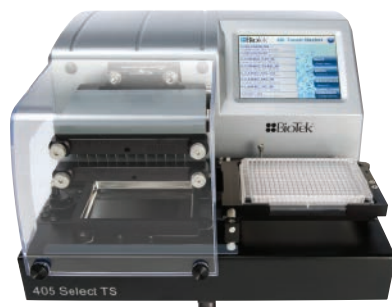
Description	Pack Size	Cat. No.
MAGPIX® Drive Fluid	4 pack, 750 mL ea	MPXDF-4PK
Sheath Fluid for Luminex® 100/200™ & FLEXMAP 3D® Systems	20 L	40-50015
Sheath Fluid (20x concentrate)	1 L	40-50018
MAGPIX® Calibration Kit	25 uses	MPX-CAL-K25
MAGPIX® Performance Verification Kit	25 uses	MPX-PVER-K25
Luminex® 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

## Training/IQOQ

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
MILLIPLEX® Analyst 5.1 Software Onsite Installation and Training	TRONSITE-MA
BioTek® Washer Onsite Installation and Training	TRONSITE-BIOTEK
MILLIPLEX® Kits Training	TRONSITE-MPX

# BioTek® Washing & Dispensing Solutions for MILLIPLEX® Assays

In partnership with BioTek®, we offer the latest advancements in fully automated magnetic separation for 96- and 384-well plate washing systems. The MultiFlo™ FX 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™ for easy washing of the toughest sample types

Description	Cat. No.
BioTek® 405™ LS Magnetic 96-well Washer	40-094
BioTek® 405™ LS Magnetic/Vacuum Filtration 96-well Washer	40-095
BioTek® 405™ TS Magnetic 96-well Washer Complete with Touch Screen and Ultrasonic Cleaning	40-096
BioTek® 405™ TS Magnetic/Vacuum Filtration 96-well Washer Complete with Touch Screen and Ultrasonic Cleaning	40-097

## BioTek® MultiFlo™ FX Automated Reagent Dispenser

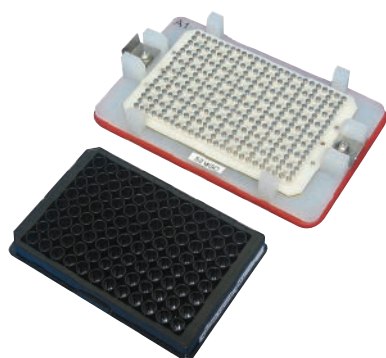


### The perfect instrument for MILLIPLEX® 384-well Assays

- Fully automated process, just load your standards, QCs 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



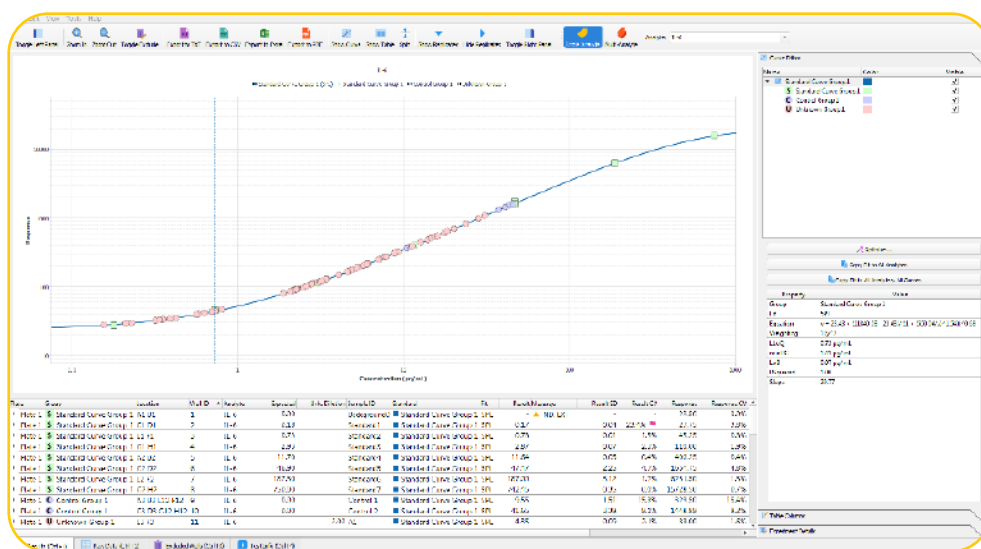
# Belysa™ Immunoassay Curve Fitting Software

(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™ 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, cubic spline)
- Curve comparison tools
- Rules-based data flagging
- Suitable for use with RUO Luminex® instruments, SMCxPRO™, and ELISA .csv acquisition files
- Win7/10 compatible



**Example 1.** Belysa™ standard curve and data analysis: IL-6 MILLIPLEX® 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



SOFTWARE

## 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™ 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 pink flags raw data which does not meet the users acceptance criteria. A decision may then be made to exclude points which will then be recorded if required for review.

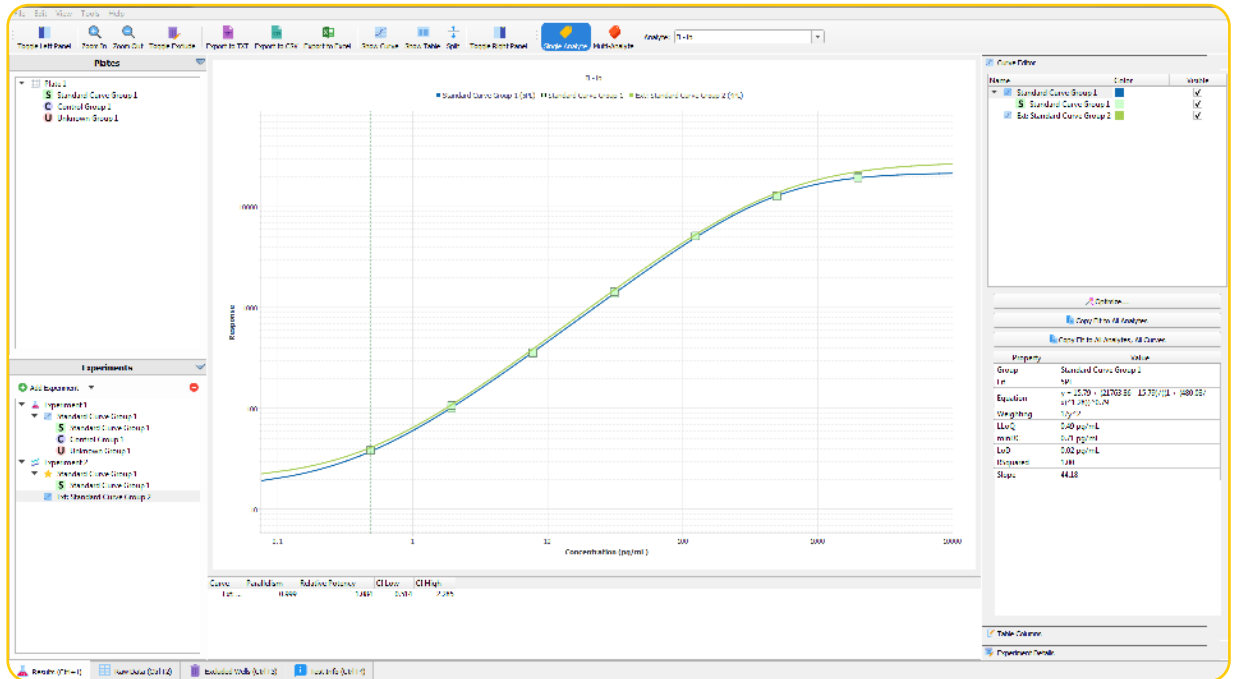
Example 2. Belysa™ data annotation: below LLOQ (yellow triangle), %CV (pink flags)

## Belysa™ Software Curve Comparison Tool

Standard curves 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™ 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™ from two lots of the same MILLIPLEX assay run 1 year apart.

# LOOK CLOSER

## All biomarker kits are not created equal

With assay performance data included in every protocol, 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 always provide an optimized native 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
- Accuracy is normally within  $\pm 30\%$

#### Linearity of Dilution

- Spike recovery in sample is performed for each analyte at three concentrations; 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

#### Dedicated Support

- Committed care when and where you need it, from our sales specialists, technical support scientists, customer support, and custom immunoassay development team

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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