

Acute Phase Response  
 Cancer  
 Cardiovascular Disease  
 Cytokine, Chemokines,  
 Growth Factors  
 Diabetes  
 Gene Expression  
 Genotyping  
 Immunoglobulin Isotyping  
 MicroRNA Expression  
 Signal Transduction  
 Toxicology

# Bio-Plex Pro™ Human Cytokine, Chemokine, and Growth Factor Assays

MAGNETIC SEPARATION ENABLED

Human Group I and Human Group II Panels

- Automated or vacuum-based wash steps
- All-in-one kit format
- Flexible ordering options



## Familiar Assays, New Format

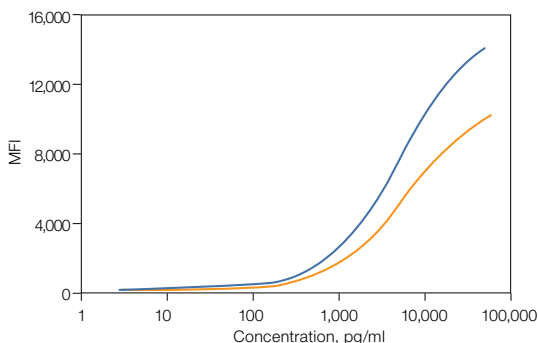
The Bio-Plex Pro Human Cytokine, Chemokine, and Growth Factor Assays are magnetic bead-based multiplex assays that offer excellent performance for the detection of multiple biomarkers in a single experiment, using as little as 12.5 µl of serum, plasma, or other fluids. Antibodies and buffer compositions are the same as the familiar nonmagnetic human group I and group II assays, but with three major improvements:

- The option for a simplified workflow. The assays are on magnetic beads (MagPlex beads by Luminex corporation), which facilitate automation of wash steps using a magnetic bead washer
- Convenient one-stop ordering. All assay reagents and buffers are now available in a single kit
- New customizable ordering options. You can order from our premixed kit offerings, have your select targets custom-blended, or order your select targets custom-shipped and mix them yourself

## Benefits of Magnetic Bead-Based Assays

Magnetic bead-based assays allow optional magnetic separation during wash steps by using an automated magnetic bead washer. This innovation greatly simplifies assay processing, eliminating the need for a vacuum manifold and may improve the inter-assay CV.

Human IL-17



Comparison of standard curves of the magnetic bead-based Bio-Plex Pro assay (—) and original polystyrene bead-based Bio-Plex® Assays (---). For all 50 human cytokine assays, transfer to the Bio-Plex Pro format resulted in comparable or improved performance.

## Assay Performance Definitions

**Assay working range** — the range of concentrations in which the assay is both precise and accurate. Boundaries of the range are the lower limit of quantitation (LLOQ) and the upper limit of quantitation (ULOQ). The intra-assay %CV and the inter-assay %CV provided in the fourth and fifth columns of Table 1 represent the mean %CV obtained within the assay working range.

**Sensitivity (Limit of detection, LOD)** — the concentration of analyte on the standard curve for which the corresponding signal value is above the background control value plus 2-fold of its standard deviation. Note that the definition of sensitivity is different from the definition of the LLOQ.

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## Assay Performance Characteristics

**Table 1. Representative assay working ranges,\* assay sensitivity, and precision.\*\*** The LLOQ, ULOQ, LOD, and intra-/inter-assay %CV are mean data determined from five assays in serum-based matrix.

Targets	Assay Working Ranges, pg/ml		Assay Sensitivity, pg/ml	Assay Precision	
	LLOQ	ULOQ	LOD	Intra-Assay %CV	Inter-Assay %CV
<b>Group I 27-Plex Panel</b>					
IL-1 $\beta$	3.2 – 3,261		0.6	6	8
IL-1 $\alpha$	81.1 – 70,487		5.5	9	8
IL-2	2.1 – 17,772		1.6	7	9
IL-4	2.2 – 3,467		0.7	9	8
IL-5	3.1 – 7,380		0.6	8	10
IL-6	2.3 – 18,880		2.6	7	11
IL-7	3.1 – 6,001		1.1	6	8
IL-8	1.9 – 26,403		1.0	9	4
IL-9	2.1 – 7,989		2.5	8	9
IL-10	2.2 – 8,840		0.3	5	6
IL-12 (p70)	3.3 – 13,099		3.5	6	6
IL-13	3.7 – 3,137		0.7	8	7
IL-15	2.1 – 2,799		2.4	5	6
IL-17	4.9 – 12,235		3.3	8	6
Eotaxin	40.9 – 5,824		2.5	8	11
Basic FGF	27.2 – 7,581		1.9	8	8
G-CSF	2.4 – 11,565		1.7	10	5
GM-CSF	63.3 – 6,039		2.2	12	6
IFN- $\gamma$	92.6 – 52,719		6.4	15	9
IP-10	18.8 – 26,867		6.1	11	9
MCP-1	2.1 – 1,820		1.1	9	7
MIP-1 $\alpha$	1.4 – 836		1.6	7	8
MIP-1 $\beta$	2.0 – 1,726		2.4	8	8
PDGF-BB	7.0 – 51,933		2.9	9	8
RANTES	2.2 – 8,617		1.8	9	6
TNF- $\alpha$	5.8 – 95,484		6.0	8	6
VEGF	5.5 – 56,237		3.1	9	7
<b>Group II 21-Plex Panel, ICAM-1 and VCAM-1</b>					
CTACK	13 – 16,874		3.4	5	6
GRO- $\alpha$	19 – 2,711		6.3	5	8
HGF	9.5 – 25,357		4.9	5	6
IFN- $\alpha$ 2	307 – 3,438		4.3	7	3
IL-1 $\alpha$	1.4 – 22,569		0.5	4	4
IL-2R $\alpha$	299 – 7,338		2.1	6	4
IL-3	12 – 22,803		4.8	7	4
IL-12 (p40)	41 – 28,662		23.3	5	8
IL-16	190 – 12,133		0.4	6	4
IL-18	1.8 – 28,677		0.2	4	5
LIF	12 – 22,184		5.5	4	3
MCP-3	79 – 11,234		1.0	7	8
M-CSF	2.0 – 32,200		0.9	4	5
MIF	231 – 24,373		1.5	5	8
MIG	2.7 – 8,584		1.2	6	6
$\beta$ -NGF	1.0 – 4,247		0.2	4	7
SCF	1.5 – 25,078		1.0	5	4
SCGF- $\beta$	66 – 47,862		45.4	6	8
SDF-1 $\alpha$	10 – 10,391		8.7	6	6
TNF- $\beta$	1.5 – 24,505		0.3	4	4
TRAIL	4.4 – 44,769		2.1	4	8
ICAM-1	13 – 26,368		2.4	4.3	3.8
VCAM-1	38 – 21,430		0.6	6.7	5.5

\* Assay range is LLOQ and ULOQ, calculated from five independent assays.

\*\* Data were generated using vacuum manifold. %CV is expected to be comparable or lower with magnetic bead washer.

## Available Human Cytokine, Chemokine, and Growth Factor Assays

Human Group I	8-Plex Panel (M50-000007A)	17-Plex Panel (M50-00031YV)	27-Plex Panel (M50-0KCAF0Y)	Th1/Th2 Panel (M50-00005L3)	Singleplex/x-Plex™ Bead Regions*	Human Group II	21-Plex Panel plus ICAM-1 and VCAM-1 (MF0-005KMII)	Singleplex/x-Plex Bead Regions*
IL-1β		•	•		• 39	IL-1α	•	• 63
IL-1ra			•		• 25	IL-2Rα	•	• 13
IL-2	•	•	•	•	• 38	IL-3	•	• 64
IL-4	•	•	•	•	• 52	IL-12 (p40)	•	• 28
IL-5		•	•	•	• 33	IL-16	•	• 27
IL-6	•	•	•		• 19	IL-18**	•	• 42
IL-7		•	•		• 74	CTACK	•	• 72
IL-8	•	•	•		• 54	GRO-α	•	• 61
IL-9			•		• 77	HGF	•	• 62
IL-10	•	•	•	•	• 56	ICAM-1***		• 12
IL-12 (p70)		•	•	•	• 75	IFN-α2	•	• 20
IL-13		•	•	•	• 51	LIF	•	• 29
IL-15			•		• 73	MCP-3	•	• 26
IL-17		•	•		• 76	M-CSF	•	• 67
Basic FGF			•		• 44	MIF	•	• 35
Eotaxin			•		• 43	MIG	•	• 14
G-CSF		•	•		• 57	β-NGF	•	• 46
GM-CSF	•	•	•	•	• 34	SCF	•	• 65
IFN-γ	•	•	•	•	• 21	SCGF-β	•	• 78
IP-10			•		• 48	SDF-1α	•	• 22
MCP-1 (MCAF)		•	•		• 53	TNF-β	•	• 30
MIP-1α			•		• 55	TRAIL	•	• 66
MIP-1β		•	•		• 18	VCAM-1***		• 15
PDGF-BB			•		• 47			
RANTES			•		• 37			
TNF-α	•	•	•	•	• 36			
VEGF			•		• 45			

\* You can design a custom assay with a combination of different targets. See ordering options below. For more information, go to [bio-rad.com/bio-plex/x-plex/](http://bio-rad.com/bio-plex/x-plex/) or contact your local Bio-Rad sales representative.

\*\* IL-18 is not available as a singleplex assay.

\*\*\* This assay requires additional sample dilution.

## Ordering Options

### Premixed Panels

Four premixed panels are available in the new all-in-one kit format.\*

### x-Plex™ Custom Assays (We Mix)

Custom premixed assay panels in the new all-in-one kit format are available as 1 x 96 and 10 x 96 kits. Minimum order of two kits applies if ordering a 6-plex or less. Go to [bio-rad.com/bio-plex/x-plex/](http://bio-rad.com/bio-plex/x-plex/) for details.

### Express Custom Assays (You Mix)

Select your singleplex targets of interest in the new all-in-one kit format and mix them yourself for faster delivery and a lower price than the custom blending service. Available as 1 x 96 kits only for up to a 10-plex maximum. Go to [bio-rad.com/bio-plex/x-plex/](http://bio-rad.com/bio-plex/x-plex/) for details.

\* Includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, 96-well filter plate, sealing tape, standard diluent, and sample diluent.

## Individual Components

Separate catalog numbers are also available for:

- Singleplex sets of coupled magnetic beads and detection antibodies
- Standards
- Reagent kits containing assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, 96-well filter plate, sealing tape, standard diluent, and sample diluent

## Ordering Information

Catalog # Description

### Bio-Plex Pro Premixed Human Cytokine Panel All-In-One Kits

Premixed panels include reagents, diluents, and one 96-well filter plate. For 10-pack sizes, please go to [bio-rad.com/bio-plex/x-plex/](http://bio-rad.com/bio-plex/x-plex/) for more information.

M50-000007A	Bio-Plex Pro Human Cytokine 8-Plex Panel, 1 x 96-well
M50-00005L3	Bio-Plex Pro Human Cytokine Th1/Th2 Panel, 1 x 96-well
M50-00031YV	Bio-Plex Pro Human Cytokine 17-Plex Panel, 1 x 96-well
M50-0KCAF0Y	Bio-Plex Pro Human Cytokine 27-Plex Panel, 1 x 96-well, analytes from group I
MF0-005KMII	Bio-Plex Pro Human Cytokine 21-Plex Panel, 1 x 96-well, analytes from group II

Catalog # Description Catalog # Description Catalog # Description

### Bio-Plex Pro Human Cytokine Singleplex Sets, 1 x 96-well, Group I\*\*

Up to 10 singleplex assays can be mixed.

171-B5001M	IL-1 $\beta$ Set	171-B5010M	IL-10 Set	171-B5019M	IFN- $\gamma$ Set
171-B5002M	IL-1 $\alpha$ Set	171-B5011M	IL-12 (p70) Set	171-B5020M	IP-10 Set
171-B5003M	IL-2 Set	171-B5012M	IL-13 Set	171-B5021M	MCP-1 (MCAF) Set
171-B5004M	IL-4 Set	171-B5013M	IL-15 Set	171-B5022M	MIP-1 $\alpha$ Set
171-B5005M	IL-5 Set	171-B5014M	IL-17 Set	171-B5023M	MIP-1 $\beta$ Set
171-B5006M	IL-6 Set	171-B5015M	Eotaxin Set	171-B5024M	PDGF-BB Set
171-B5007M	IL-7 Set	171-B5016M	Basic FGF Set	171-B5025M	RANTES Set
171-B5008M	IL-8 Set	171-B5017M	G-CSF Set	171-B5026M	TNF- $\alpha$ Set
171-B5009M	IL-9 Set	171-B5018M	GM-CSF Set	171-B5027M	VEGF Set

Catalog # Description Catalog # Description Catalog # Description

### Bio-Plex Pro Human Cytokine Singleplex Sets, 1 x 96-well, Group II\*\*

Up to 10 singleplex assays can be mixed.

171-B6001M	IL-1 $\alpha$ Set	171-B6009M	ICAM-1 Set***	171-B6017M	SCF Set
171-B6002M	IL-2R $\alpha$ Set	171-B6010M	IFN- $\alpha$ 2 Set	171-B6018M	SCGF- $\beta$
171-B6003M	IL-3 Set	171-B6011M	LIF Set	171-B6019M	SDF-1 $\alpha$ Set
171-B6004M	IL-12 (p40) Set	171-B6012M	MCP-3 Set	171-B6020M	TNF- $\beta$ Set
171-B6005M	IL-16 Set	171-B6013M	M-CSF Set	171-B6021M	TRAIL Set
171-B6006M	CTACK Set	171-B6014M	MIF Set	171-B6022M	VCAM-1 Set***
171-B6007M	GRO- $\alpha$ Set	171-B6015M	MIG Set		
171-B6008M	HGF Set	171-B6016M	$\beta$ -NGF Set		

Catalog # Description

### Ordering by Individual Components

The following are required when ordering singleplex sets. One reagent kit and one vial of standards are required for one 96-well experiment.

171-304070	Bio-Plex Pro Cytokine Reagent Kit*, 1 x 96-well
171-304071	Bio-Plex Pro Cytokine Reagent Kit*, 10 x 96-well
171-D50001	Bio-Plex Pro Human Cytokine Standards, Human group I, 1 vial of 27 analytes
171-D10501	Bio-Plex Pro Human Cytokine Standards, Human group I, 50 vials of 27 analytes
171-D60001	Bio-Plex Pro Human Cytokine Standards, Human group II, 1 vial of 23 analytes
171-D10502	Bio-Plex Pro Human Cytokine Standards, Human group II, 50 vials of 23 analytes

### Bio-Plex Pro Wash Stations and Plates

300-34376	Bio-Plex Pro Wash Station, includes magnetic plate carrier, waste bottle, 2 buffer bottles
300-34377	Bio-Plex Pro II Wash Station, includes magnetic plate carrier, vacuum manifold plate carrier, waste bottle, 2 buffer bottles
171-025001****	Bio-Plex Pro Flat-Bottom Plates, 40 x 96-well plates

### Bulk Buffer

171-304500	Bio-Plex Wash Buffer, 1.5 L
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\* Required only with singleplex sets. Reagent kit now contains diluents. Therefore, separate diluent kit is not required.

\*\* Each singleplex set includes coupled magnetic beads and detection antibodies for the detection of the specified analyte (reagent kits and standards are offered separately).

\*\*\* Human ICAM-1 and VCAM-1 require different sample dilutions. These targets are ordered separately from the other group II targets.

\*\*\*\* Required for washing Bio-Plex Pro assays or other magnetic bead-based assays using the magnetic plate carrier.

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