

Acute Phase Response
Cancer
Cardiovascular Disease
Diabetes
Cytokines, Chemokines,
Growth Factors
Immunology/Inflammation
Immunoglobulin Isotyping
Cell Signaling
Toxicology

Bio-Plex Pro™ Human Th17 Cytokine Assays

MAGNETIC SEPARATION ENABLED

IL-1 β , IL-4, IL-6, IL-10, IL-17A, IL-17F, IL-21, IL-22, IL-23, IL-25, IL-31, IL-33, IFN- γ , sCD40L, TNF- α , IL-17A/F

- Validated on human plasma, serum, and cell culture samples
- Magnetic or vacuum assay separation
- All-in-one kit format
- Flexible ordering options



High Performance Multiplex Assays for Immunology Research

The Bio-Plex Pro Human Th17 Cytokine Panel is a unique blend of magnetic bead-based immunoassays designed to meet the needs of the most discerning preclinical and clinical researchers. The multiplex format enables robust and reproducible measurement of 15+1 soluble proteins involved in the T-helper cell type 17 immune response pathway, which is thought to play a key role in inflammatory conditions such as:

- Rheumatoid arthritis, lupus, psoriasis, multiple sclerosis, and other autoimmune diseases
- Antimicrobial immunity
- Transplant rejection
- Cancer

These assays incorporate several features to enhance both quality and ease of use:

- Reagent Kit II with diluents optimized for serum and plasma samples
- Assay quick guide to get you started right away
- Assay protocol optimized for high-precision and broad-assay working ranges
- 2-level quality controls included with premixed kits

Benefits of Magnetic Bead-Based Assays

Magnetic bead-based assays enable automation of wash steps with a Bio-Plex Pro series or similar wash station. This innovation simplifies assay processing and eliminates the need for a vacuum manifold. After adopting the magnetic assay workflow, many users experience improved assay precision, in particular with viscous samples.

Rigorous Assay Validation

All Bio-Plex Pro Assays undergo a rigorous evaluation that includes the following parameters:

- Specificity and cross-reactivity
- Accuracy (recovery) in key sample matrices
- Inter- and intra-assay precision
- Sensitivity (limit of detection, LOD)
- Assay working range (LLOQ/ULOQ)
- Linearity of dilution
- Parallelism and matrix effect
- Performance characteristics in real samples

Assay Performance Definitions

The following parameters are indicative of assay performance as shown in Table 1.

Assay working range — the range of concentrations within which the assay is precise and accurate. Boundaries of the assay working range are defined by the lower limit of quantitation (LLOQ) and the upper limit of quantitation (ULOQ)

Precision — the coefficient of variation (%CV) at concentrations within the assay working range

Accuracy (recovery) — percentage of the observed concentration relative to the expected concentration of a known amount of analyte within the assay working range

Sensitivity — the concentration of analyte for which the fluorescence intensity signal is two standard deviations above the background signal

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Table 1. Representative assay performance.

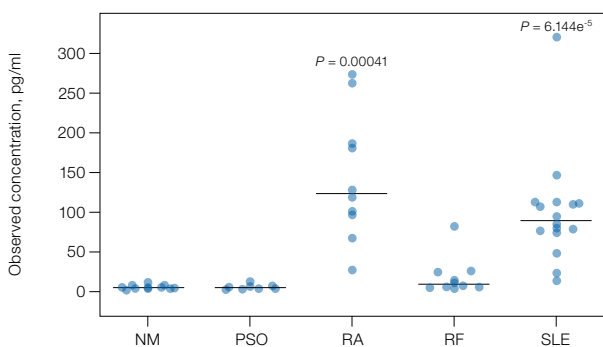
Target	Alternate Names	Assay Working Range, pg/ml		Assay Sensitivity, pg/ml	Assay Precision		Calibration to WHO/NIBSC	
		LLOQ	ULOQ	LOD	Intra-Assay %CV	Inter-Assay %CV	Factor**	NIBSC Catalog #
IL-1 β	–	0.24	3,994	0.02	3.5	3.8	1.0	86/680
IL-4	–	1.33	1,361	0.52	2.4	8.6	0.7	88/656
IL-6	–	1.65	27,078	0.67	2.9	7.9	1.6	89/548
IL-10	–	1.99	32,674	0.30	2.8	6.2	1.3	93/722
IL-17A	IL-17, CTLA8	1.20	19,682	0.49	2.2	6.2	0.4	01/420
IL-17F	–	3.04	18,668	0.80	4.3	8.2	–	–
IL-21	Za11	8.97	147,023	2.13	3.3	6.7	–	–
IL-22	–	3.88	11,917	0.30	2.2	5.7	–	–
IL-23	IL-23A, SGRF	7.35	120,389	1.55	3.8	9.3	–	–
IL-25	IL-17E	1.00	16,375	0.07	2.9	5.0	–	–
IL-31	–	3.87	63,397	0.49	3.9	5.5	–	–
IL-33	–	4.18	68,483	0.58	2.7	5.3	–	–
IFN- γ	–	2.54	20,779	0.43	3.3	10.1	1.7	87/586
sCD-40L	CD154	2.41	39,457	0.41	2.8	8.7	–	–
TNF- α	–	0.57	9,270	0.07	4.1	5.1	0.4	88/786
IL-17A/F*	–	1.62	6,631	1.28	4.3	5.8	–	–

The LLOQ, ULOQ, LOD, and inter-assay precision %CV are mean data determined from three independent multiplex assays in a serum-based matrix. Intra-assay %CV is the mean of eight standard points run in triplicate within one representative assay. LLOQ and ULOQ are defined as the boundary standard curve points that meet precision and accuracy specifications of 10% intra-assay CV and 80–120% recovery. Data were generated using the magnetic workflow with the Bio-Plex Pro II Wash Station.

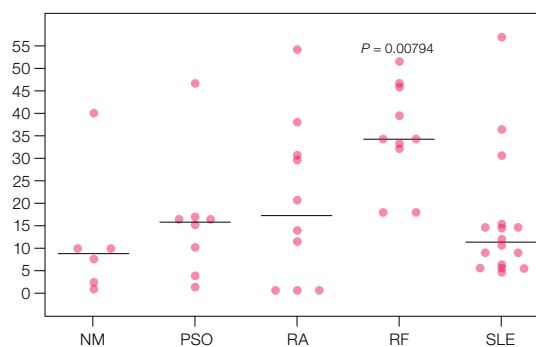
* IL-17A/F values are derived from the singleplex assay format.

** Factor \times NIBSC value (pg/ml) = Bio-Plex Pro value (pg/ml). Factors are based on average % recovery of Bio-Plex Pro standards (in the linear range) relative to NIBSC standards run on the same assay plate.

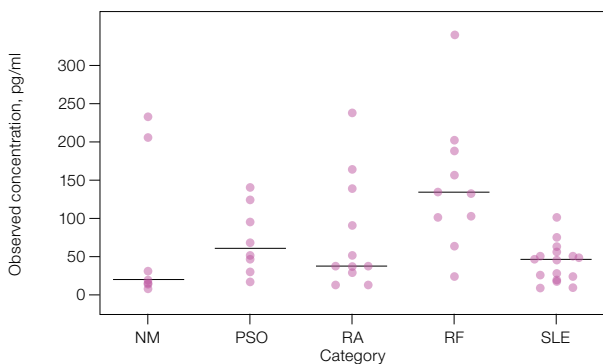
IL-6



IL-10



IL-33



sCD-40L

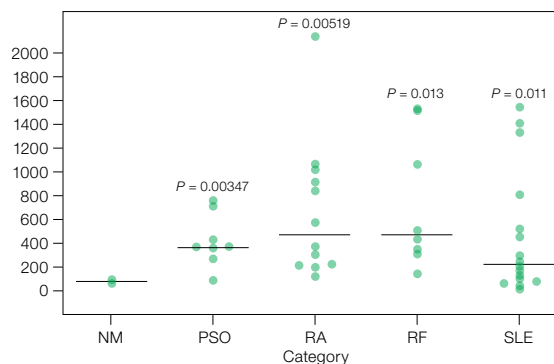


Fig. 1. Serum cytokine levels from individuals with psoriasis (PSO, N = 8), rheumatoid arthritis (RA, N = 14), rheumatoid factors (RF, N = 10), and systemic lupus erythematosus (SLE, N = 18). Nonmatching normal (NM, N = 11) serum samples were used as the baseline reference. The t-test function in Bio-Plex Data Pro™ Software was used to calculate statistical differences. Only P values with statistical significance are shown.

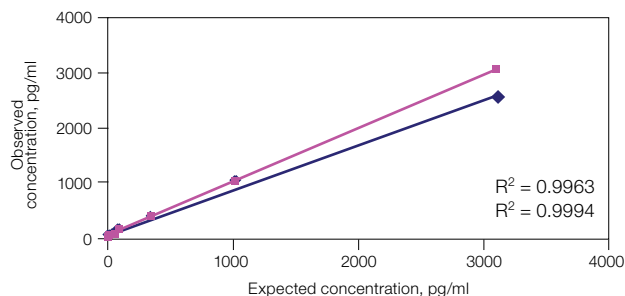


Fig. 2. Linearity of dilution determines the suitability of a standard curve for reflecting relative quantities of an analyte in a complex matrix. Linearity of dilution of IL-17F was assessed by spiking a known quantity of recombinant antigen into human serum and plasma matrices. The observed and expected concentrations within the assay working range were plotted. The correlation coefficient (R^2) value reflects the linearity of dilution for the assay. Representative results are shown. Plasma (■); serum (◆).

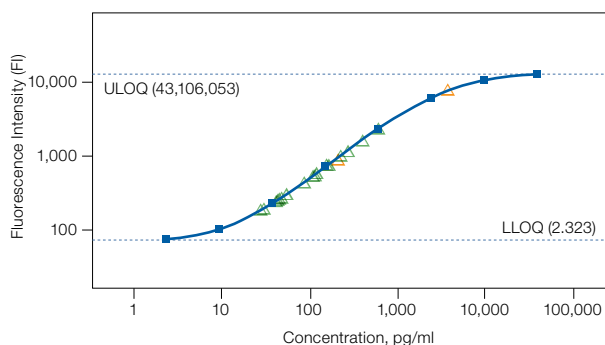


Fig. 3. sCD40L standard curve with human serum and plasma samples. Data were analyzed using Bio-Plex Manager™ Software version 6.0. Recovery range specification was set to 80–120%. Standard (■); unknown (▲); control (△).

Flexible Ordering Options

For more information see Table 2.

Premixed 15-Plex Panel

This option provides excellent value and performance as well as fast delivery. The full panel is available as an all-in-one assay kit, which includes a flat bottom plate so that you can take advantage of magnetic assay processing.

Note: IL-17A/F is available only as a singleplex and cannot be mixed with IL-17A or IL-17F assays.

x-Plex™ Custom Assays (We Mix)

A great choice for premium custom-mixed assays. Simply select your analytes of interest and plate type using the online Bio-Plex Assay Builder at bio-rad.com/assaybuilder. Assays are mixed for you at Bio-Rad and delivered as an all-in-one kit.

Express Custom Assays (You Mix)

An economical choice with fast delivery. Simply select up to 10 singleplex analytes of interest and plate type using the Bio-Plex Assay Builder. Assays are delivered as individual sets of coupled beads and detection antibodies in an all-in-one kit, ready for you to mix.

Individual Components

For your convenience, a host of singleplex sets and individual assay components are also available. See ordering information provided in this bulletin, or log on to bio-rad.com/bio-plex. Note: the quality controls provided in premixed assay kits are not sold separately.

Table 2. Comparison of features for each ordering option.

	Premixed 15-Plex Panel	x-Plex Custom Assay (We Mix)	Express Custom Assay (You Mix)	Singleplex/Individual Components
All-in-one kit	•	•	•	
2-level quality controls	•	•		
Flat bottom plate only	•			
Choice of plate type		•	•	•
Choice of analytes		•	•	•
Detailed product data sheet	•	•		
Assay quick guide*	•	•	•	
Faster delivery	•		•	•
Premium performance	•	•		

* Printed guide included in assay kits. Also available online at bio-rad.com/bio-plex.

Ordering Information

Catalog# Description

Human Th17 Cytokine Assays

Human Th17 Premixed, All-In-One Kit

171-AA001M **Bio-Plex Pro Human Th17 Cytokine Panel, 15-Plex**, 1 x 96-well, includes premixed coupled magnetic beads, detection antibodies, standards, 2-level controls, detection antibody diluent, standard diluent HB, sample diluent HB, assay buffer, wash buffer, streptavidin-PE, 96-well flat bottom plate, sealing tape, and instructions for detecting IL-1 β , IL-4, IL-6, IL-10, IL-17A, IL-17F, IL-21, IL-22, IL-23, IL-25, IL-31, IL-33, IFN- γ , sCD40L, TNF- α . IL-17A/F not included

Human Th17 Singleplex Sets, 1 x 96-well*

171-BA001M IL-1 β
171-BA002M IL-4
171-BA003M IL-6
171-BA004M IL-10
171-BA005M IL-17A
171-BA006M IL-17F
171-BA007M IL-21
171-BA008M IL-22
171-BA009M IL-23
171-BA010M IL-25
171-BA011M IL-31
171-BA012M IL-33
171-BA013M IFN- γ
171-BA014M sCD40L
171-BA015M TNF- α
171-BA016M IL-17A/F**

Reagent Kits for Use with Human Th17 Assays

171-304055 **Bio-Plex Pro Reagent Kit II with Filter Plate**, 1 x 96-well, includes detection antibody diluent, standard diluent HB, sample diluent HB, assay and wash buffers, streptavidin-PE, filter plate, and sealing tape, for vacuum separation methods
171-304055M **Bio-Plex Pro Reagent Kit II with Flat Bottom Plate**, 1 x 96-well, includes detection antibody diluent, standard diluent HB, sample diluent HB, assay and wash buffers, streptavidin-PE, flat bottom plate, and sealing tape, for magnetic separation methods

Human Th17 Standards

171-DA0001 **Bio-Plex Pro Human Th17 Cytokine Standard**, pkg of 1 vial, lyophilized mixture of 16 standard antigens
171-DA0501 **Bio-Plex Pro Human Th17 Cytokine Standard**, pkg of 50 lot-matched vials, lyophilized mixture of 16 standard antigens

* Singleplex sets include coupled magnetic beads and detection antibodies. Human Th17 sets also require Bio-Plex Pro Reagent Kit II (171-304055 or 171-304055M) and Human Th17 Standards to run an assay.

** IL-17A/F cannot be mixed with IL-17A or IL-17F assays.

*** TGF- β singleplex sets require Bio-Plex Pro Reagent Kit (171-304070 or 171-304070M) and TGF- β Standards to run an assay.

The Bio-Plex suspension array system includes fluorescently labeled microspheres and instrumentation licensed to Bio-Rad Laboratories, Inc. by the Luminex Corporation.

HASP is a trademark of Aladdin Knowledge Systems, Ltd.

Catalog# Description

Additional Th17 Pathway Assays

TGF- β All-In-One Kit

171-W4001M **Bio-Plex Pro TGF- β 3-Plex Panel**, 1 x 96-well, includes premixed coupled magnetic beads and detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, filter plate, flat bottom plate, sealing tape, standard diluent, sample diluent, and instructions for the detection of TGF- β 1, TGF- β 2, and TGF- β 3

TGF- β Singleplex Sets, 1 x 96-well***

171-V4001M TGF- β 1
171-V4002M TGF- β 2
171-V4003M TGF- β 3

TGF- β Standards

171-X40001 **Bio-Plex Pro TGF- β Standard**, pkg of 1 vial, TGF- β standard for detecting TGF- β 1, TGF- β 2, and TGF- β 3 analytes
171-X40501 **Bio-Plex Pro TGF- β Standard**, pkg of 50 lot-matched vials, TGF- β standard for detecting TGF- β 1, TGF- β 2, and TGF- β 3 analytes

Reagent Kits for Use with TGF- β Assays

171-304070 **Bio-Plex Pro Reagent Kit**, 1 x 96-well, includes assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, filter plate, sealing tape, standard diluent, sample diluent; for vacuum separation methods
171-304070M **Bio-Plex Pro Reagent Kit with Flat Bottom Plate**, 1 x 96-well, includes assay buffer, wash buffer, detection antibody diluent, streptavidin-PE, flat bottom plate, sealing tape, standard diluent, sample diluent; for use with magnetic separation methods

Wash Stations

300-34376 **Bio-Plex Pro Wash Station**, includes magnetic plate carrier, waste bottle, 2 buffer bottles

Accessories

171-020100 **Bio-Plex Handheld Magnetic Washer**, includes magnetic washer and adjustment hex tools for use in manual wash steps for all Bio-Plex magnetic assays
171-025001 **Bio-Plex Pro Flat Bottom Plates**, 40 x 96-well plates
171-304500 **Bio-Plex Wash Buffer**, 1.5 L
171-304502 **Filter plate**, pkg of 1, 96-well plate with clear plastic lid and tray, for Bio-Plex assays using the vacuum wash method, sealing tape not included

Software

171-001510 **Bio-Plex Data Pro Software with Bio-Plex Manager Software**, Bio-Plex Data Pro Software (5 seats), for multi-experiment analysis and advanced data visualization, and Bio-Plex Manager Software (5 seats), for instrument data evaluation and optimization. CDs and security HASP key included
171-001513 **Bio-Plex Data Pro Software**, Bio-Plex Data Pro Software (5 seats), for multi-experiment analysis and advanced data visualization
171-STND01 **Bio-Plex Manager Software**, includes 1-user desktop license, to analyze Bio-Plex data and generate protocols, does not operate the instrument



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