

Acute Phase Response
Cancer
Cardiovascular Disease
Cytokines, Chemokines,
Growth Factors
Diabetes
Gene Expression
Genotyping
Immunoglobulin Isotyping
MicroRNA
Cell Signaling
Toxicology

Bio-Plex[®] MAGPIX[™] Bio-Plex[®] 200 and Bio-Plex[®] 3D Systems — Comparable Performance Across the Board

DEDICATED MAGNETIC ADVANTAGE

Practical, Versatile, and High-Throughput Options

- Time savings
- Cost effectiveness
- Flexible multiplexing
- Sample saving

Bio-Rad offers a comprehensive selection of array readers for multiplex applications to satisfy a variety of research needs and budgets. These readers include the Bio-Plex MAGPIX system with practical multiplexing functionality, the versatile Bio-Plex 200 system, and the Bio-Plex 3D system with high-throughput capacity. Assay performance based on sample concentration determinations, working assay ranges, limit of detection (LOD), and inter-assay %CV is similar on the Bio-Plex MAGPIX, Bio-Plex 200, and Bio-Plex 3D systems. Bio-Plex Pro[™] assays can be run on all three systems.



Bio-Plex MAGPIX System

Practical Multiplexing

The Bio-Plex MAGPIX system is appropriate for labs that have

- Budget constraints
- Limited benchspace
- Interest in running magnetic bead-based immunoassays



Bio-Plex 200 System

Unparalleled Versatility

The Bio-Plex 200 system is suitable for labs that value

- User-friendly data management
- Benefits resulting from a single acquisition and analysis software package
- Running magnetic and nonmagnetic assays



Bio-Plex 3D System

High-Throughput Capacity

The Bio-Plex 3D system is optimal for labs with

- Fewer budget restrictions
- High-throughput needs
- Robotics-interfacing requirements

BIO-RAD

Bio-Plex Pro human 27-plex group I cytokine assays were tested on the Bio-Plex MAGPIX, Bio-Plex 200, and Bio-Plex 3D systems using 96-well plates. The performance of the Bio-Plex assays was compared based on sensitivity, assay range, precision, accuracy, and sample concentrations. The standards, blanks, and serum samples were run in duplicates using the low PMT setting on Bio-Plex 200 and Bio-Plex 3D systems. Comparable performance was observed from all three systems.

Standard Curves from the Bio-Plex MAGPIX, Bio-Plex 200, and Bio-Plex 3D Systems Have Similar Shapes and Slopes

Representative standard curves from human 27-plex assays were generated for data acquired from the three instruments (Figure 1). The standard curves have similar shapes and slopes. However, mean fluorescence intensity (MFI) values obtained on the Bio-Plex 3D system were higher than those of the Bio-Plex 200 system. A high PMT setting on the Bio-Plex 200 system generated curves similar to those of the Bio-Plex 3D System. These higher MFI values do not result in higher sensitivity.

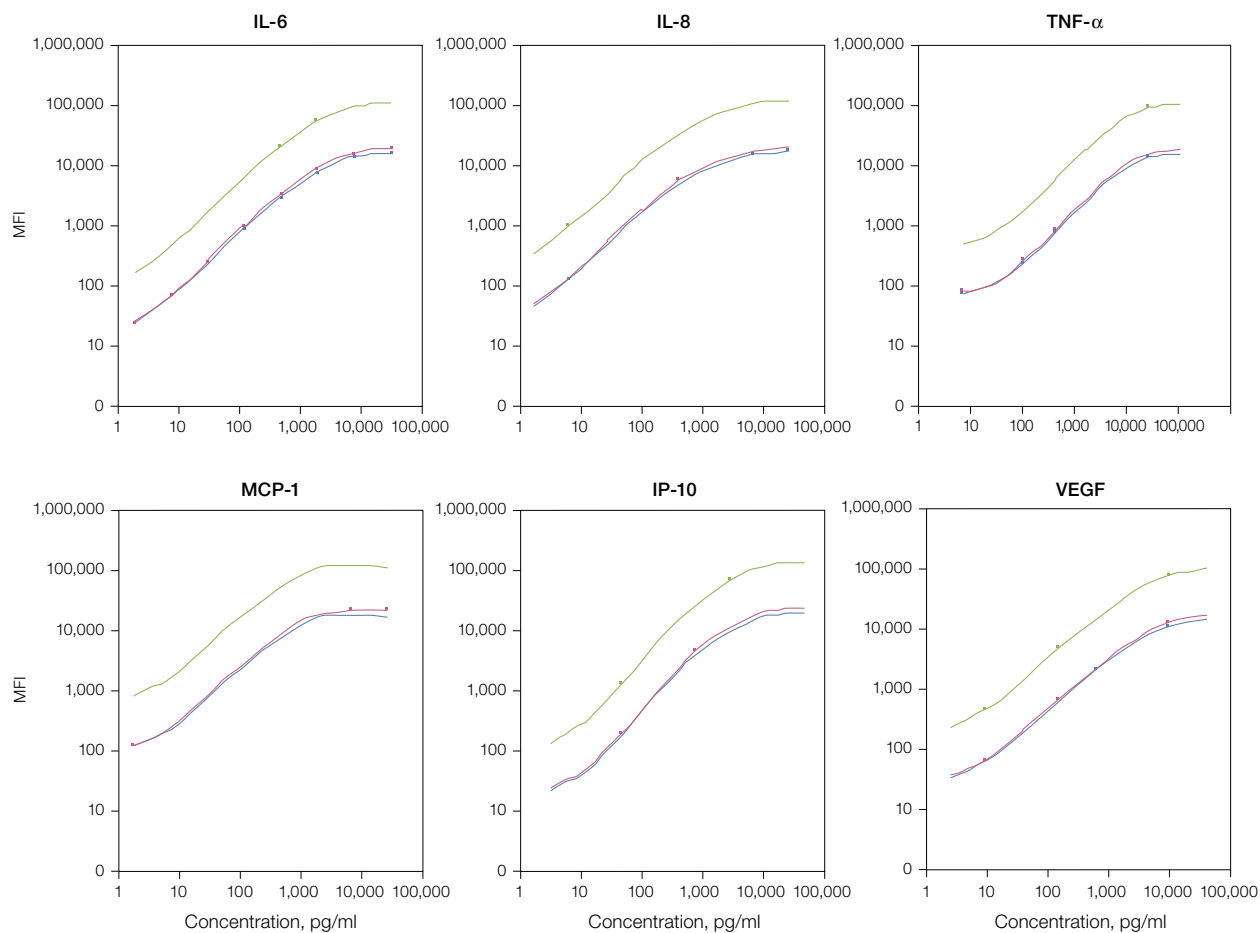


Fig. 1. Standard curve comparison of human 27-plex assays using the Bio-Plex MAGPIX (■), Bio-Plex 200 (■), and Bio-Plex 3D (■) systems.

The Bio-Plex MAGPIX, Bio-Plex 200, and Bio-Plex 3D Systems Report Comparable LOD Values

LOD is the concentration corresponding to the minimum MFI value that can be reliably differentiated from background and is defined as two standard deviations of the appropriate blank values. This translates into 99% certainty that any signal measured at this MFI is the result of the presence of the analyte. The LOD of human 27-plex assays tested are shown here as mean values from three independent assays (Figure 2). Results demonstrate that the sensitivity of the majority of analytes is comparable on all three instrument platforms.

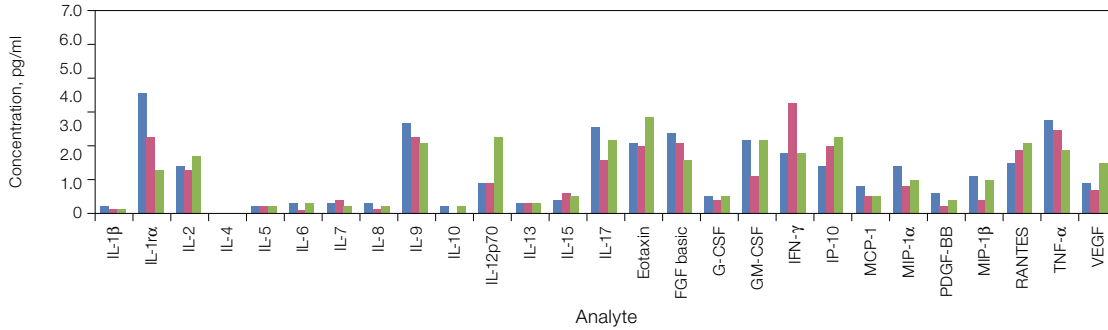


Fig. 2. LOD of Bio-Plex Pro human 27-plex group I cytokines using the Bio-Plex MAGPIX (red), Bio-Plex 200 (blue), and Bio-Plex 3D (green) systems.

The Bio-Plex 3D System Demonstrates Higher Background and Sample MFI Than Other Platforms

The background signal assessed using a human 27-plex assay was similar on the Bio-Plex MAGPIX and Bio-Plex 200 systems, but was higher on the Bio-Plex 3D system (Figure 3). This corresponds to the proportionate increase in MFI at all points of the standard curve on the Bio-Plex 3D system.

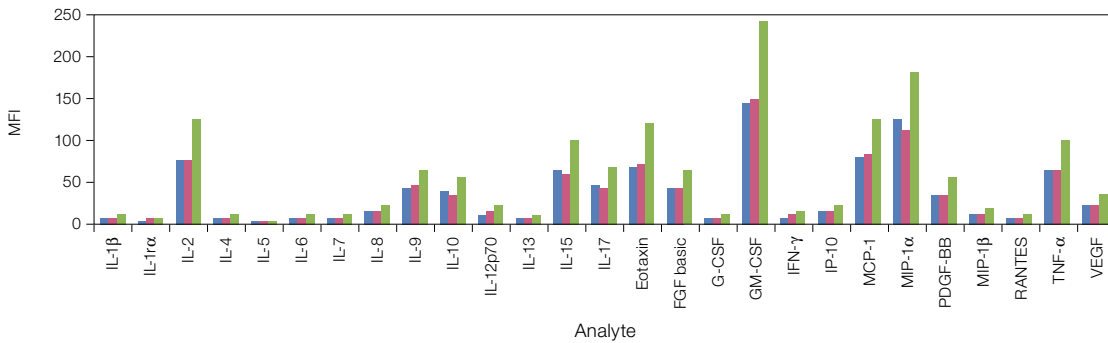


Fig. 3. Background signal obtained with human 27-plex assays using the Bio-Plex MAGPIX (red), Bio-Plex 200 (blue), and Bio-Plex 3D (green) systems.

Similar Inter-Assay Precision on All Three Instruments

The inter-assay precision calculated using observed concentrations of spiked control from three independent experiments was comparable on all three instrument types for most of the analytes tested (Figure 4). Spiked controls were created by adding recombinant analytes to human serum.

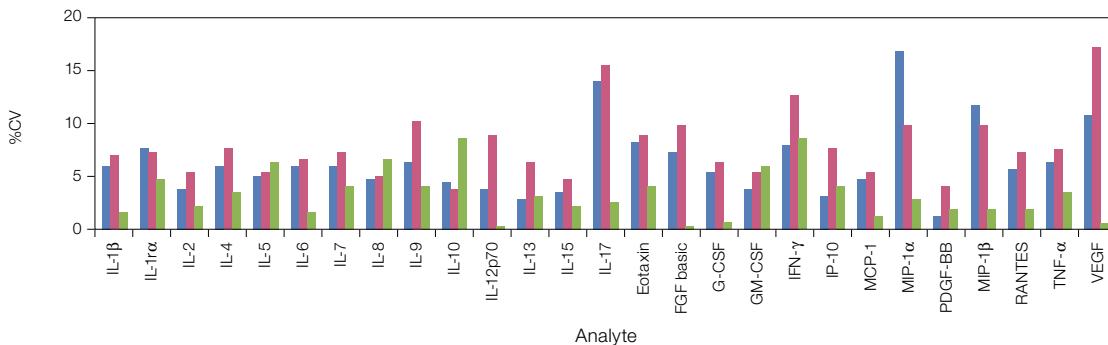


Fig. 4. Inter-assay precision of human 27-plex assays using the Bio-Plex MAGPIX (red), Bio-Plex 200 (blue), and Bio-Plex 3D (green) systems.

Similar Working Assay Range

The working assay range is defined as the standard curve range where the analytes meet the recovery of 70–130% and intra-assay precision of 20% and is bound by the lower limit of quantification (LLOQ) and upper limit of quantification (ULOQ). Assay ranges for most of the analytes were similar on all three instruments, with a few minor fluctuations in LLOQ (Figure 5).

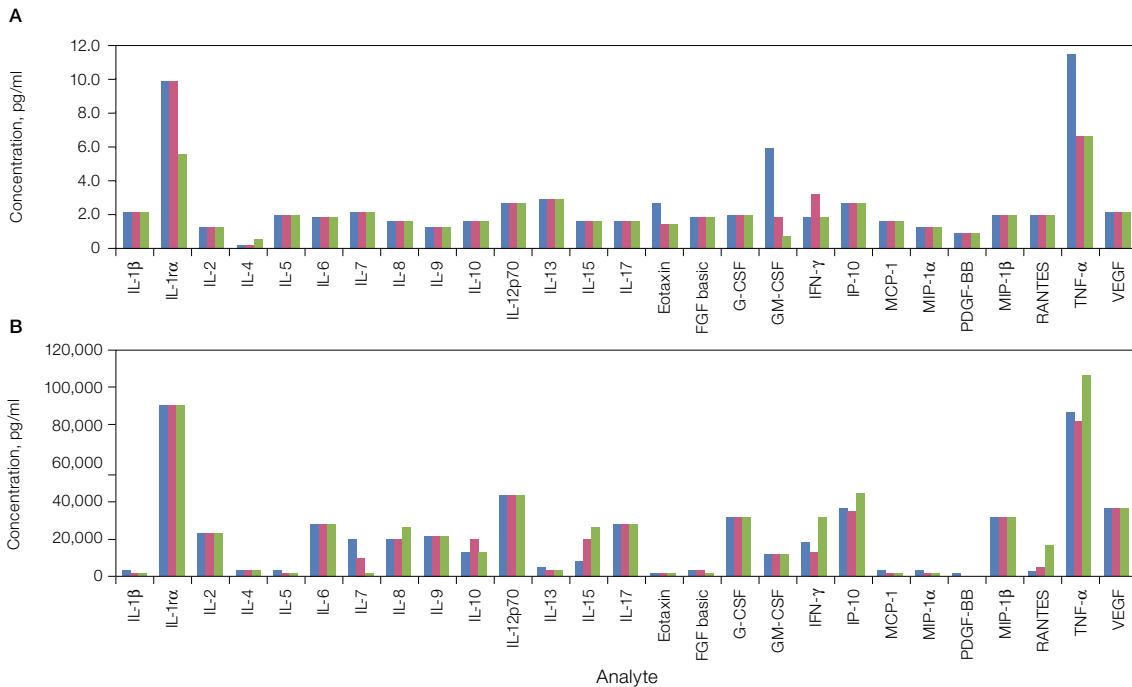


Fig. 5. Lower limit of quantification (A) and upper limit of quantification (B) obtained with the Bio-Plex MAGPIX (■), Bio-Plex 200 (■), and Bio-Plex 3D (■) systems.

Similar Sample Concentrations on All Three Instruments

Six serum samples were evaluated for concentration on the three instruments. Figure 6 depicts the concentrations of samples analyzed using the Bio-Plex MAGPIX, Bio-Plex 200, and Bio-Plex 3D systems for representative analytes from human 27-plex assays. Concentration values were similar for all samples tested with Bio-Plex Pro human 27-plex group I cytokines. The error bars represent standard deviations from three independent experiments.

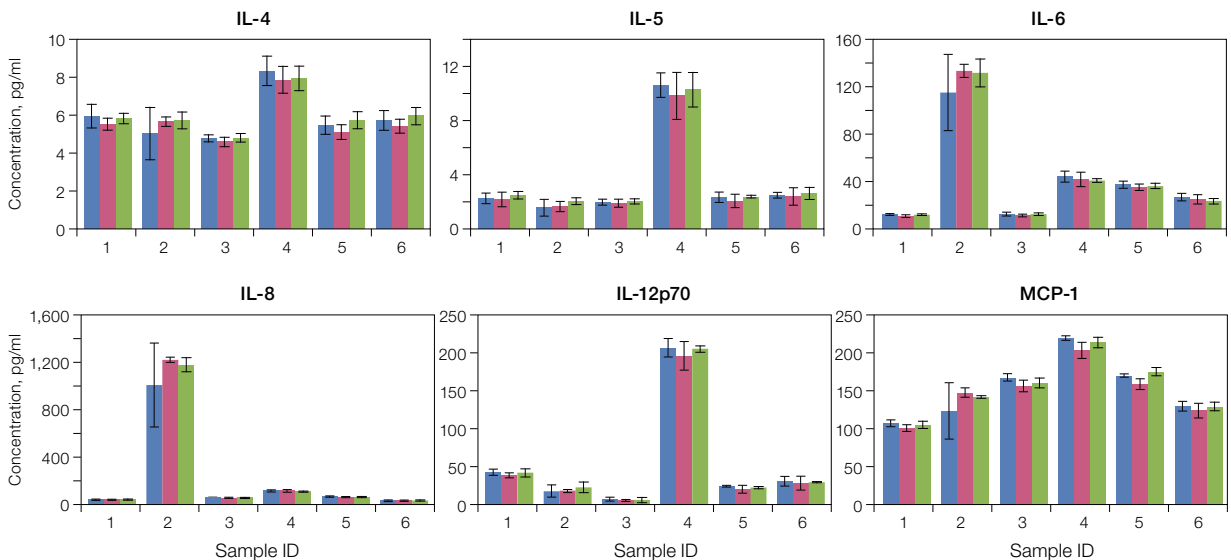


Fig. 6. Sample concentrations acquired with the Bio-Plex MAGPIX (■), Bio-Plex 200 (■), and Bio-Plex 3D (■) systems.

Table 1. Instrument and assay compatibility.

Assay	Bio-Plex MAGPIX System	Bio-Plex 200 System	Bio-Plex 3D System
Magnetic bead-based assays (6.5 µm bead)			
Bio-Plex Pro human cancer biomarker panel assays	•	•	•
Bio-Plex Pro human Th17 assays	•	•	•
Bio-Plex Pro mouse Th17 assays	•	•	•
Bio-Plex Pro cell signaling assays	•	•	•
Bio-Plex Pro human cytokine assays*	•	•	•
Bio-Plex Pro mouse cytokine assays	•	•	•
Bio-Plex Pro rat cytokine assays	•	•	•
Bio-Plex Pro human diabetes assays	•	•	•
Bio-Plex Pro mouse diabetes assays	•	•	•
Bio-Plex Pro rat diabetes assays	•	•	•
Bio-Plex Pro TGF-β assays	•	•	•
Nonmagnetic bead-based assays			
Bio-Plex signal transduction assays	–	•	•
Magnetic fixed panel assays (8.0 µm bead)			
Bio-Plex Pro acute phase assay	–	•	–
Bio-Plex® Precision Pro™ human cytokine assay	–	•	–
Bio-Plex Pro isotyping assay	–	•	–
Bio-Plex Pro angiogenesis assay	–	•	–

* Except Bio-Plex Precision Pro human cytokine assay (catalog #171-A1001P).

Table 2. Distinct features of the three instrument platforms.

	Bio-Plex MAGPIX System	Bio-Plex 200 System	Bio-Plex 3D System
Software	xPONENT (acquisition) Bio-Plex Manager™ (analysis)	Bio-Plex Manager (acquisition and analysis) xPONENT (optional)	xPONENT (acquisition) Bio-Plex Manager (analysis)
Optics	LED/CCD camera	Lasers/APDs/PMTs	Lasers/APDs/PMTs
Multiplex capacity	50	100	500
Bead compatibility	MagPlex–C	MagPlex–C MicroPlex LumAvidin xTAG	MagPlex–C MicroPlex LumAvidin xTAG
Read time	~60 min/96-well plate	~40 min/96-well plate	~20 min/96-well plate ~75 min/384-well plate
Applications	Low- to mid-throughput	Mid-throughput	High-throughput
Plate format	96-well	96-well	96-well/384-well
Dynamic range	3.5 logs	3.5 logs	4.5 logs

Consistent Performance Across All Platforms

The assay performance based on sample concentration determinations, working ranges, LOD, and inter-assay %CV is similar on Bio-Plex MAGPIX, Bio-Plex 200, and Bio-Plex 3D systems. Bio-Plex Pro assays can be run on all three systems.

Ordering Information

Catalog #	Description	Catalog #	Description
Instruments		Software	
171-015001	Bio-Plex MAGPIX Multiplex Reader with Bio-Plex Manager Software , includes Bio-Plex MAGPIX instrument, PC with xPONENT acquisition software installed, Bio-Plex Manager desktop license, calibration kit, verification kit, 2 drive fluid cartridges, 2 waste containers	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
171-000201	Bio-Plex 200 System , 100–240 V, includes array reader, microplate platform, Bio-Plex Manager software with workstation license, PC, monitor, calibration kit, validation kit 4.0, MCV plate IV, Bio-Plex reservoir, 20 L sheath fluid, spare sample needle	171-001513	Bio-Plex Data Pro Software , (5 seats), for multi-experiment analysis and advanced data visualization
171-000205	Bio-Plex 200 System with HTF , same as 171-000201 with high-throughput fluidics (HTF)	171-STND01	Bio-Plex Manager Software , includes 1 user desktop license, to analyze Bio-Plex data and generate protocols, does not operate the instrument
Bio-Plex 3D	Bio-Plex 3D System , includes Bio-Plex 3D suspension array system, xPONENT acquisition software, PC, calibration reagents, verification reagents, Bio-Plex Manager software, desktop license		Luminex, MAGPIX, MagPlex, MicroPlex, LumAvidin, xMAP, xPONENT, and xTAG are trademarks of Luminex Corporation. HASP is a trademark of Aladdin Knowledge Systems, Ltd. The Bio-Plex suspension array system includes fluorescently labeled microspheres and instrumentation licensed to Bio-Rad Laboratories, Inc. by the Luminex Corporation.
Kits and Reagents			
171-213001	Bio-Plex MAGPIX Calibration Kit , calibration testing kit for Bio-Plex MAGPIX instrument, includes 5 ml calibrator microspheres, twenty-five 8-well strips, CD; 25 applications	CST antibodies exclusively developed and validated for Bio-Plex phosphoprotein and total target assays.	
171-213002	Bio-Plex MAGPIX Verification Kit , includes MAGPIX verifier, 5 ml microspheres, MAGPIX fluidics 1, MAGPIX fluidics 2, MAGPIX performance verification kit CD, twenty-five 8-well strips; 25 applications		
171-213003	Bio-Plex MAGPIX Drive Fluid , pkg of 4, 700 ml drive fluid, for use with Bio-Plex MAGPIX instrument		
Accessories			
171-012004	Bio-Plex MAGPIX Replacement Waste Fluid Container , pkg of 1, 850 ml container, holds waste fluid, for use with Bio-Plex MAGPIX instrument		
171-012005	Bio-Plex MAGPIX Sample Probe Needle , pkg of 1, needle		
171-012006	Bio-Plex MAGPIX Sample Probe Height Adjustment Kit , sample probe height adjustment kit		
171-012008	Bio-Plex MAGPIX 96-Well Plate Heater Block , pkg of 1, heater block, fits one 96-well plate, for use with Bio-Plex MAGPIX instrument		
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		
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		



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