

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

Bio-Plex Pro Diabetes Assay Panels

MAGNETIC SEPARATION ENABLED

Adiponectin, adipisin, C-peptide, ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, resistin, visfatin

- Fast time to results
- Convenient kit formats
- Available in human, mouse, and rat models



Reliable Multiplex Measurement of Diabetes and Obesity Markers

Bio-Plex Pro Diabetes Assays deliver accurate and reproducible measurements of 12 markers of diabetes and obesity in serum plasma and tissue culture supernatant samples. These magnetic bead-based multiple assays offer best-in-class performance in a single experiment, using as little as 12.5 μ l of sample. These assays have been developed to deliver accurate and reproducible measurements with complete flexibility to meet all your research needs.

- Increased productivity — measure up to 12 diabetes and obesity markers in 3 hours
- Simplified workflow — option to prepare assays with magnetic wash steps
- Flexible ordering options — order a premixed kit or select only desired biomarkers to multiplex
- Broad assay ranges
- Tested for robustness in serum and plasma matrices
- Available for multiple species: human, mouse, and rat

Assay Performance Definitions

- **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 and upper limits of quantification (LLOQ and ULOQ)
- **Precision** — the percentage coefficient of variation (%CV) at concentrations within the assay working range
- **Accuracy** — the percentage of the observed concentration versus the expected concentration of a known amount of spiked analyte within the assay working range
- **Sensitivity (limit of detection [LOD])** — the concentration of analyte for which the fluorescence intensity signal is 2 standard deviations above the background signal

Data are shown in Tables 1–3 and Figures 1–3.

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. Many users also see significantly improved reproducibility.

BIO-RAD

Table 1. Human assays – representative assay performance.

Targets	Assay Working Range, pg/ml		Assay Sensitivity, pg/ml	Assay Precision	
	LLOQ	ULOQ	LOD	Intra-Assay %CV	Inter-Assay %CV
2-Plex Assays					
Adiponectin*	56	918,749	31	3	2
Adipsin*	4	60,653	6	4	6
10-Plex Assays					
C-peptide	9	31,805	4	3	5
Ghrelin	3	41,664	3	4	3
GIP	3	20,458	3	3	6
GLP-1	12	88,106	12	3	4
Glucagon	47	83,803	47	3	3
Insulin	1	13,620	1	3	5
Leptin	3	41,614	3	4	4
PAI-1	3	57,156	3	4	3
Resistin	2	37,222	1	3	3
Visfatin	19	157,030	8	3	3

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 derived from one representative assay. LLOQ and ULOQ are defined as the boundary standard curve points for which the performance specifications of individual standard points were met for 10% intra-assay CV and a recovery range of 70–130%. Data were generated using the magnetic workflow with the Bio-Plex Pro II Wash Station.

* Due to a different dilution scheme, adiponectin and adipsin were assayed as a 2-plex assay.

Table 2. Mouse assays – representative assay performance.

Targets	Assay Working Range, pg/ml		Assay Sensitivity, pg/ml	Assay Precision	
	LLOQ	ULOQ	LOD	Intra-Assay %CV	Inter-Assay %CV
Singleplex Assay					
Adiponectin*	38.0	62,043	8.4	4	3
8-Plex Assays					
Ghrelin	3.1	7,296	0.8	5	4
GIP	13.4	14,999	2.3	4	10
GLP-1	3.4	1,969	0.8	6	11
Glucagon	24.0	3,067	7.0	6	6
Insulin	93.4	47,815	22.0	6	4
Leptin	17.1	69,900	6.2	4	3
PAI-1	0.7	2,922	0.5	5	2
Resistin	125.9	257,870	32.0	4	4

The LLOQ, ULOQ, LOD, and inter-assay precision %CV are the mean data determined from three independent multiplex assays in a serum-based matrix. Intra-assay %CV is derived from one representative assay. LLOQ and ULOQ are defined as the boundary standard curve points for which the performance specifications of individual standard points were met for 10% intra-assay CV, 15% inter-assay CV, and a recovery range of 80–120%. Data were generated using the magnetic workflow with the Bio-Plex Pro II Wash Station.

* Due to a different dilution scheme, adiponectin was assayed as a single assay.

Table 3. Rat assays – representative assay performance.

Targets	Assay Working Range, pg/ml		Assay Sensitivity, pg/ml	Assay Precision	
	LLOQ	ULOQ	LOD	Intra-Assay %CV	Inter-Assay %CV
Singleplex Assays					
Ghrelin	1	16,152	0.3	4	4
GLP-1	4	6,062	3	8	6
Glucagon	6	4,443	6	3	4
Leptin	24	130,465	5	4	3
PAI-1	49	66,888	27	5	3

The LLOQ, ULOQ, LOD, and inter-assay precision %CV are the mean data determined from three independent multiplex assays in a serum-based matrix. Intra-assay %CV is derived from one representative assay. LLOQ and ULOQ are defined as the boundary standard curve points for which the performance specifications of individual standard points were met for 10% intra-assay CV, 15% inter-assay CV, and a recovery range of 80–120%. Data were generated using the magnetic workflow with the Bio-Plex Pro Wash Station.

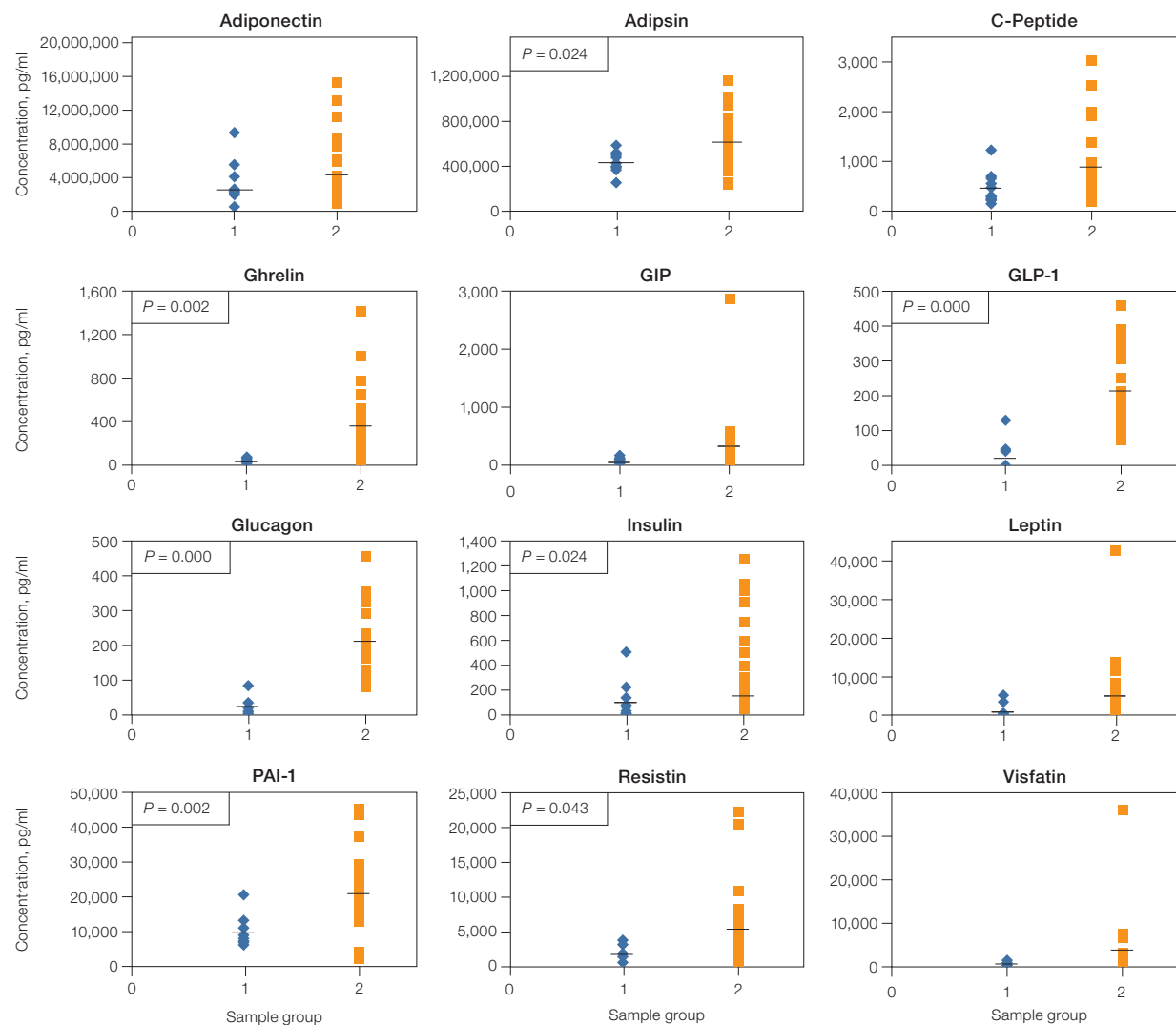


Fig. 1. Levels of biomarkers in human sera of normal (◆) and type II diabetic (■) groups. A Student *t*-test was used to determine statistical significance between groups. Black lines denote mean values. *P* values are indicated for markers that were significantly different from normal samples (*P* < 0.05).

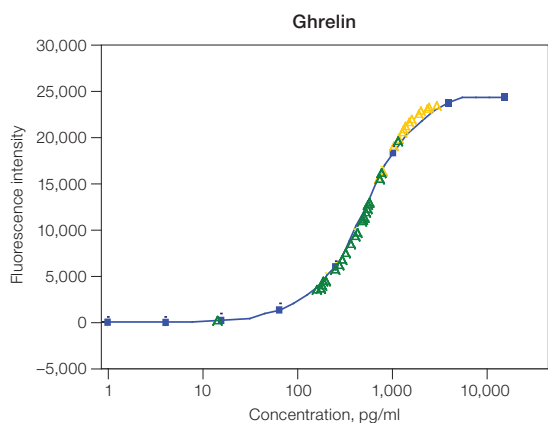


Fig. 2. Mouse assay working ranges. Data were analyzed using Bio-Plex Manager Software, using the standard curve optimization function. Recovery range specification was set to 80–120%. A total of 39 serum and plasma samples, fasting and fed, from wild-type or diabetic mice, are shown. Standard points (■); diabetes samples (▲); normal samples (△). Result is shown for ghrelin.

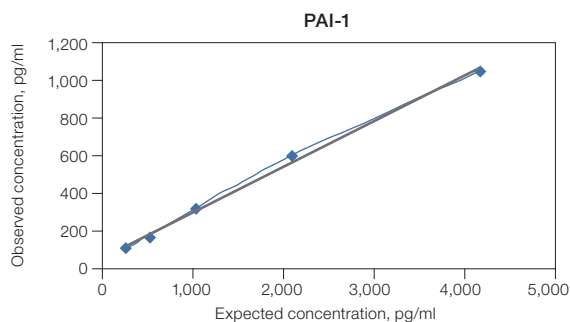


Fig. 3. Rat linearity of dilution. Linearity of analyte measurements in either serum or plasma (threefold) were measured using linear regression analysis. Result is shown for PAI-1 assay diluted in rat serum. R^2 value was 0.99 or higher within the assay working range for all assays in both serum and plasma.

Flexible Ordering Options

Bio-Plex Pro Diabetes Assays are available in multiple convenient configurations to best fit your needs.

Premixed Panels

One kit with everything you need to run an experiment.

Singleplex Set

Order any combination of singleplex sets, then order just one reagent kit and standard to complete your experiment.

Express Kit (you mix)

Use the online Assay Builder tool, bio-rad.com/AssayBuilder, to design your kit.

The kit will then be shipped to you; mix prior to use.

Ordering Information

Catalog # Description

Bio-Plex Pro Human Diabetes All-in-One Kits

171A7001M	Bio-Plex Pro Human Diabetes 10-Plex Assay , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-phycoerythrin, flat bottom plate, sealing tape, standard diluent HB, sample diluent for the detection of C-peptide, ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, resistin, and visfatin, control
171A7002M	Bio-Plex Pro Human Diabetes Adipsin and Adiponectin Assays , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-phycoerythrin, flat bottom plate, sealing tape, serum-based diluent for the detection of adiponectin and adipsin, control

Bio-Plex Pro Human Diabetes Singleplex Sets*

171B7003M	C-Peptide
171B7004M	Ghrelin
171B7005M	GIP
171B7006M	GLP-1
171B7007M	Glucagon
171B7008M	Insulin
171B7009M	Leptin
171B7010M	PAI-1
171B7011M	Resistin
171B7012M	Visfatin

Bio-Plex Pro Human Diabetes Standards

Standards are for the detection of adiponectin, adipsin, C-peptide, ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, resistin, and visfatin.

171D70001	Bio-Plex Pro Human Diabetes Standards , pkg of 1 vial, lyophilized mixture of 12 analytes
171D70050	Bio-Plex Pro Human Diabetes Standards , pkg of 50 lot-matched vials, lyophilized mixture of 12 analytes

Bio-Plex Pro Reagent Kit

171304090M	Bio-Plex Pro Reagent Kit with Flat Bottom Plate , 1 x 96-well, includes flat bottom plate, assay buffer, wash buffer, detection antibody diluent, streptavidin-phycoerythrin, sealing tape, standard diluent, sample diluent
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Bio-Plex Pro Mouse Diabetes All-in-One Kits

171F7001M	Bio-Plex Pro Mouse Diabetes 8-Plex Assay , 1 x 96-well, includes premixed coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-phycoerythrin, flat bottom plate, sealing tape, standard diluent, sample diluent for the detection of ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, resistin
171F7002M	Bio-Plex Pro Mouse Diabetes Adiponectin Assay , 1 x 96-well, includes coupled magnetic beads, detection antibodies, standards, assay buffer, wash buffer, detection antibody diluent, streptavidin-phycoerythrin, flat bottom plate, sealing tape, serum-based diluent for the detection of adiponectin

Bio-Plex Pro Mouse Diabetes Singleplex Sets*

171G7002M	Ghrelin
171G7003M	GIP
171G7004M	GLP-1
171G7005M	Glucagon
171G7006M	Insulin
171G7007M	Leptin
171G7008M	PAI-1
171G7009M	Resistin

Bio-Plex Pro Mouse Diabetes Standards

Standards are for the detection of adiponectin, ghrelin, GIP, GLP-1, glucagon, insulin, leptin, PAI-1, and resistin.

171I70001	Bio-Plex Pro Mouse Diabetes Standards , pkg of 1 vial, lyophilized mixture of 9 analytes
171I70050	Bio-Plex Pro Mouse Diabetes Standards , pkg of 50 lot-matched vials, lyophilized mixture of 9 analytes

Bio-Plex Pro Reagent Kits

12002798	Bio-Plex Pro Reagent Kit V , 1 x 96-well, includes assay buffer, 10x wash buffer, detection antibody diluent HP, streptavidin-phycoerythrin, flat bottom plate, sealing tape, standard diluent, sample diluent
12005847	Bio-Plex Pro Reagent Kit V , 10 x 96-well, includes assay buffer, 10x wash buffer, detection antibody diluent HP, streptavidin-phycoerythrin, flat bottom plate, sealing tape, standard diluent, sample diluent

Bio-Plex Pro Rat Diabetes Singleplex Sets*

171L7001M	Ghrelin
171L7003M	GLP-1
171L7004M	Glucagon
171L7006M	Leptin
171L7007M	PAI-1

* Singleplex sets include coupled beads and detection antibodies. Reagent kits and standards are required to run an assay.

Catalog # Description

Bio-Plex Pro Rat Diabetes Standards*

Standards are for the detection of ghrelin, GLP-1, glucagon, leptin, and PAI-1.

171NZ0001 **Bio-Plex Pro Rat Diabetes Standards**, pkg of 1 vial, lyophilized mixture of 31 analytes

171NZ0501 **Bio-Plex Pro Rat Diabetes Standards**, pkg of 50 lot-matched vials, lyophilized mixture of 31 analytes

Bio-Plex Pro Reagent Kits

12002798 **Bio-Plex Pro Reagent Kit V**, 1 x 96-well, includes assay buffer, 10x wash buffer, detection antibody diluent HP, streptavidin-phycoerythrin, flat bottom plate, sealing tape, standard diluent, sample diluent

12005847 **Bio-Plex Pro Reagent Kit V**, 10 x 96-well, includes assay buffer, 10x wash buffer, detection antibody diluent HP, streptavidin-phycoerythrin, flat bottom plate, sealing tape, standard diluent, sample diluent

Bio-Plex Pro Wash Stations and Accessories

30034376 **Bio-Plex Pro Wash Station**, includes magnetic plate carrier, waste bottle, 2 buffer bottles

171025001** **Bio-Plex Pro Flat Bottom Plates**, 40 x 96-well plates

171020100 **Bio-Plex Handheld Magnetic Washer**, includes magnetic washer and adjustment hex tools for use in manual wash steps for all Bio-Plex Magnetic Assays

* Singleplex sets include coupled beads and detection antibodies. Reagent kits and standards are required to run an assay.

** Required when using the Bio-Plex Pro Wash Station.

Visit bio-rad.com/Bio-PlexProDiabetes for more information.

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