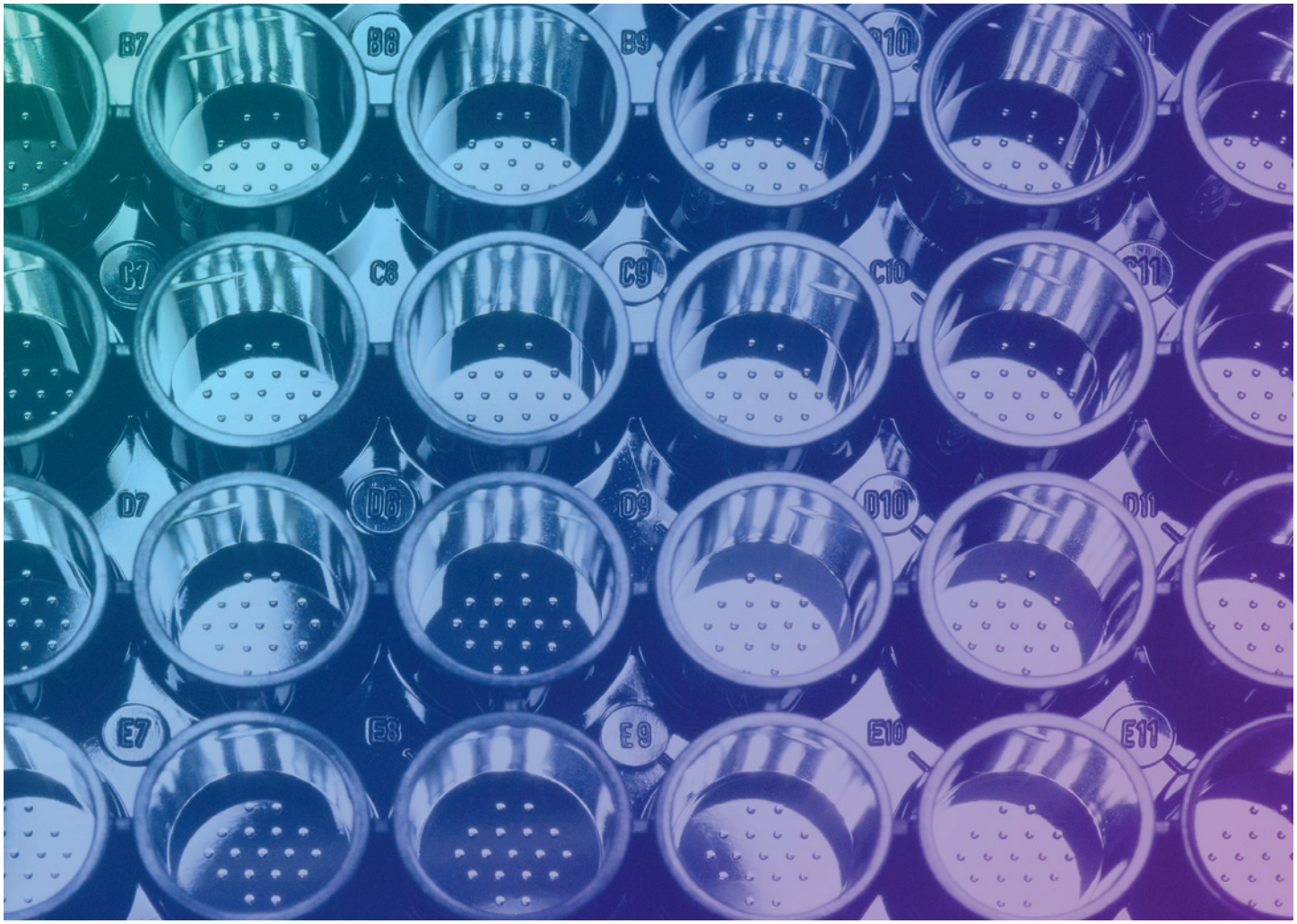
Quansys Multiplex Systems for Complement and Cytokines



MULTIPLEX SYSTEMS FOR COMPLEMENT AND CYTOKINES

The Q-Plex Array Technology is a multiplex ELISA based on chemiluminescence. It is capable of measuring and quantifying up to 18 distinct analytes in one well: complement fragments, cytokines, chemokines, hormones and proteins. Each well of the 96-well plate contains a defined array of printed capture microspots. Detection of the array is performed by the Q-View Imager and data are reported in different individual formats.

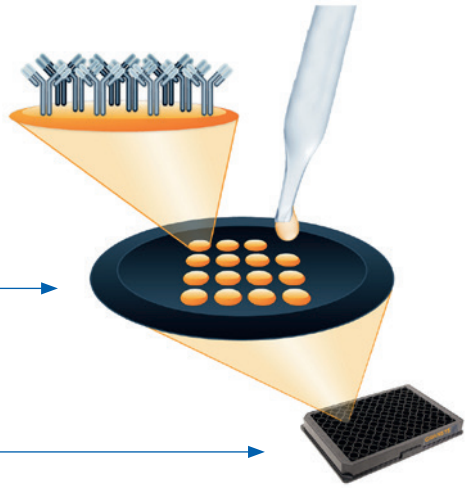
Technology

ELISA Plate Technology: Chemiluminescence

Capture antibody is applied to 350-500 µm spots to bind target proteins

Deposition of 20-50 nL

Static 96-well plate specially created to prevent inter-well signal loss



ELISA Formats

Competitive and sandwich ELISA formats allow for testing high and low abundant proteins in the same assay, while expanding dynamic range between analytes.

Indirect ELISA

Crude viral lysate, cell lysates, recombinant virus antigens, peptides etc. to detect IgG antibodies.

Sandwich ELISA

To maximize sensitivity of low abundant analytes.

Competitive ELISA

For high abundant proteins.

Detection

Signal from individual spots is generated via standard biotin and streptavidin-HRP complexing. Chemiluminescent signal detection and intensity is then used to determine presence and quantity of the specific analytes.

Multiplex Assays

Complement Assays MicroVue (Quidel)

- 9 analytes
- 1:100 dilution for all analytes in the Multiplex format
- In comparison, individual ELISAs require different dilutions for each analyte
- Sample type: plasma and serum (5µl)

Cytokine Assays (Quansys)

- 15 Human Cytokine assays – up to 18 analytes
- 9 Animal Cytokine assays (rat, mouse, porcine)
- Human assays suitable for monkey samples
- Sample type: serum, plasma, cell culture and other biological fluids (25µl)

MicroVue Complement Fragment Assays - Standard and custemized 3- to 8-Plex

The ability to measure multiple Complement proteins in an individual sample constitutes a major step forward in research-based tools. The MicroVue Complement Multiplex can quantitatively measure eight individual complement proteins, providing a comprehensive overview of complement system homeostasis and activation.

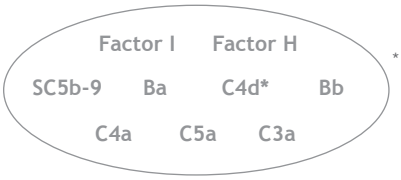
Panel 1: Ba, Bb, C3a, C4a, C4d*, C5a, SC5b-9, Factor H, Factor I
Panel 2: C3a, C4a, C5a, SC5b-9, Bb
Panel 3: Factor D, Factor P, C3d, C1q and total C2, C3, C4, C5.

General Activation
C3a, C5a, SC5b-9

Classical Pathway
C4a

Alternative Pathway
Ba, Bb

Regulatory Proteins
Factor H, Factor I



* due to compatibility issues, analytes C4a and C4d cannot be selected in the same kit

Analyte	Ba (ng/mL)	Bb (µg/mL)	C3a (ng/mL)	C4a (ng/mL)	C4d (µg/mL)	C5a (ng/mL)	Factor H (µg/mL)	Factor I (ng/mL)	SC5b-9 (ng/mL)
Limit of Detection (LOD)	0.113	0.0018	0.0103	0.145	0.0034	0.002	0.063	17.16	0.95
Lower Limit of Quantitation	0.38	0.003	0.55	0.8	0.0154	0.0082	0.17	39.40	1.63
Upper Limit of Quantitation	28.00	0.24	87.80	87.00	0.90	1.10	8.60	748.10	362.10
Precision (intra-assay)	6%	10%	5%	7%	4%	6%	3%	5%	6%
Precision (inter-assay)	11%	13%	10%	10%	6%	10%	9%	10%	10%
Correlation to MicroVue Kit (R2)	0.928	0.977	0.966	0.969	0.920	0.962	0.978	0.884	0.962

MicroVue Complement Performance and Validation Data

The data in the table below shows the R2 value between plasma samples run on established MicroVue Complement EIA kits and on the MicroVue Complement Multiplex. High correlation between the products is shown and demonstrates experimental integrity for the multiplex.

Analyte	Ba	Bb	C3a	Ca4	C4d	C5a	SC5b-9	Factor I	Factor H
R^2	0.928	0.977	0.966	0.969	0.971	0.962	0.962	0.978	0.884

MicroVue Complement Multiplex Assays – Animal Cross Reaction

Product	African Green Monkey	Cynomolgous Monkey	Rhesus Monkey	Dog	Baboon	Pigtail Monkey	Rabbit
C3a*	None						
C5a	None						
Ba	✓	✓	✓	✓			
Bb		✓	✓				
Sc5b-9	✓	✓	✓		✓	✓	✓
C4d					✓		
C4a	✓	✓				✓	
Factor I	None						
Factor H	None						

* C3a in monkeys can only be measured with the individual ELISA kit

Evaluation and comparative analysis of the Microvue Complement Multiplex using Complement Proteins Bb, C3a, C5a, and SC5b-9.

National Jewish Health (NJH), USA
Sept. 2019

National Jewish Health (NJH), a leading complement testing laboratory, evaluated a customized selection of analytes (Bb, C3a, C5a, sC5b-9) using the multiplex. Zymosan was added to healthy donor serum samples to activate the alternative pathway. To confirm correlation established by SPG, NJH evaluated the individual EIA kits for Bb, C3a, C5a, and sC5b-9 and compared them to the multiplex. The results show that the complement multiplex reliably measured analyte levels in activated samples while achieving high correlation with the individual analyte kits. This demonstrates that the MicroVue Complement Multiplex is a precise and efficient tool for complement system protein evaluation.

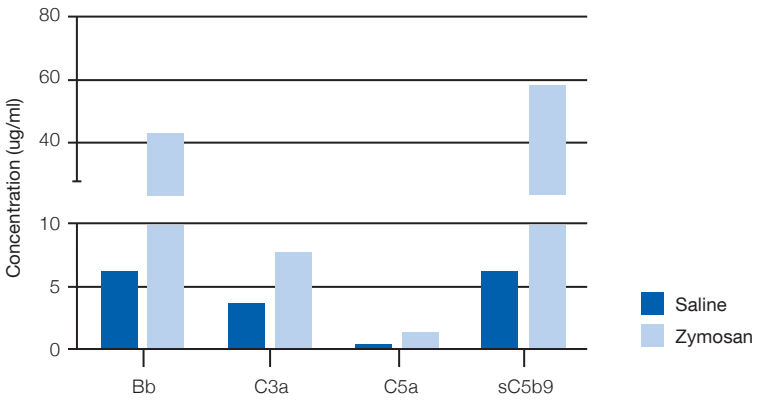
Materials and methods

Samples: Normal serum samples were activated with varying concentrations of zymosan for 30 minutes at 37°C. Samples were stored frozen at -80°C until testing.
Multiplex: Serum samples were evaluated by ELISA multiplex (Quidel, Cat. #A900) per manufacturer instructions. Samples were then analyzed on the PRO Imager (Quansys Biosciences, Cat# 107550GR) with corresponding software (Quansys Biosciences, Cat# 104414GR).

Results

Measurement of Bb, C3a, C5a, and sC5b-9 analytes when induced by complement activator: Human samples activated with zymosan, an alternative pathway activator, showed significant increases in Bb with corresponding increases in C3a, C5a, and sC5b-9 (Figure 1.). Though C5a levels compare low to other analytes, this may be explained by total measurement of overall units when the correlation data is considered (Figure 2.), as C5a showed an expected and ratioed activator response versus the control samples.

Figure 1



Correlation data comparison of complement analytes by SPG and NJH:

High correlation between the complement multiplex and individual MicroVue analyte kits was observed in samples evaluated by SPG and NJH (Figure 2., Table 1.). Figure 2. shows correlation graphs established by NJH using control, unstimulated serum samples (• - black) and zymosan treated serum samples (• - blue). Table 1. shows correlation data (R2 value) between the complement multiplex and individual EIA kits for Bb, C3a, C5a, and sC5b-9. Analytes Bb, C5a, and sC5b-9 show high consistency. C3a shows disparity between the achieved R2 values, though the correlation chart demonstrates the expected biological response upon activation (Figure 2.).

Figure 2

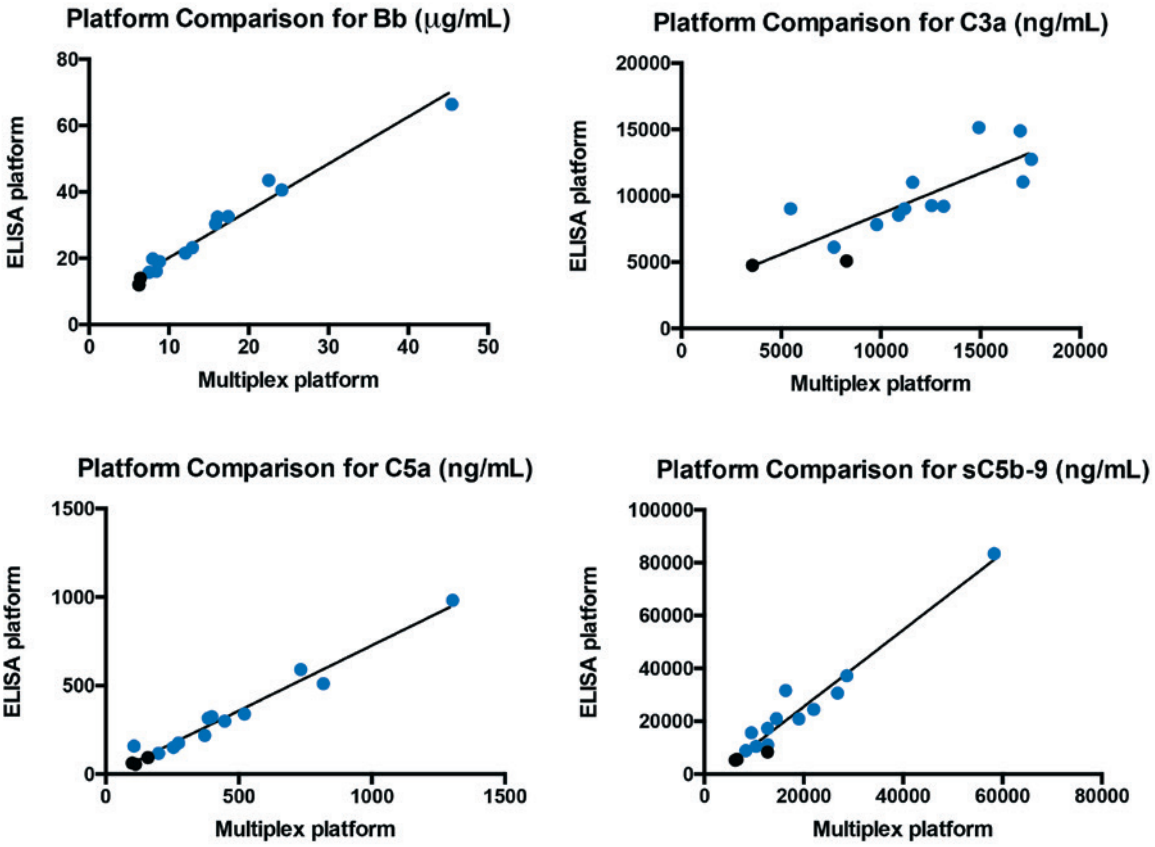


Table 1	Bb	C3a	C5a	sC5b-9
R2 - SPG	0.977	0.966	0.962	0.962
R2 - NJH	0.967	0.676	0.967	0.946

Laboratory Logistics Analysis:

The complement multiplex saves technician time and sample volume and offers advantages in terms of productivity and personnel requirements (Table 2.).

Table 2	Multiplex	Individual kit
Analytes	Bb, C3a, C5a, sC5b-9	Bb, C3a, C5a, sC5b-9
Kits required	1	1
Personnel required	1	2 (1tech per 2 kits)
Assay Time	4 hrs.	4 hrs.
Sample required (Serum)	20µL	80µL (20µL per kit)

Summary

Through both internal evaluation by SPG and independent analysis by NJH, the MicroVue Complement Multiplex demonstrates the ability to measure select complement analytes in human serum or plasma samples. In addition, high correlation between the multiplex and individual analyte EIA kits was confirmed independently by NJH. Combined with the increased laboratory efficiency by consolidating 4 EIA kits into one multiplex that saves technician time and requires less sample, the MicroVue Complement Multiplex is demonstrated as a precise and effective product for complement system research.

Quansys Multiplex Cytokine Standard Assays

Human Multiplex Assays

- Human Angiogenesis (9-plex)
- Human Chemokine (4-plex)
- Human Chemokine (9-plex)
- Human Cytokine (4-plex)
- Human Cytokine – High Sensitivity (15-plex)
- Human Cytokine – Inflammation (9-plex)
- Human Cytokine – Screen (16-plex)
- Human Cytokine – Strip wells (16-plex)
- Human Cytokine Panel 1 (6-plex)
- Human Cytokine Panel 2 (6-plex)
- Human Female Hormone (8-plex)
- Human Micronutrient (7-plex)
- Human MMP (6-plex)
- Human Malaria (5-Plex)

Mouse Multiplex Assays

- Mouse Cytokine Inflammation (14-plex)
- Mouse Cytokine Panel 1 (4-plex)
- Mouse Cytokine Panel 1 (6-plex)
- Mouse Cytokine Panel 2 (4-plex)
- Mouse Cytokine Panel 2 (6-plex)
- Mouse Cytokine – Screen (16-plex)
- Mouse Cytokine – Strip wells (16-plex)

Rat Multiplex Assays

- Rat Cytokine – Inflammation (9-plex)

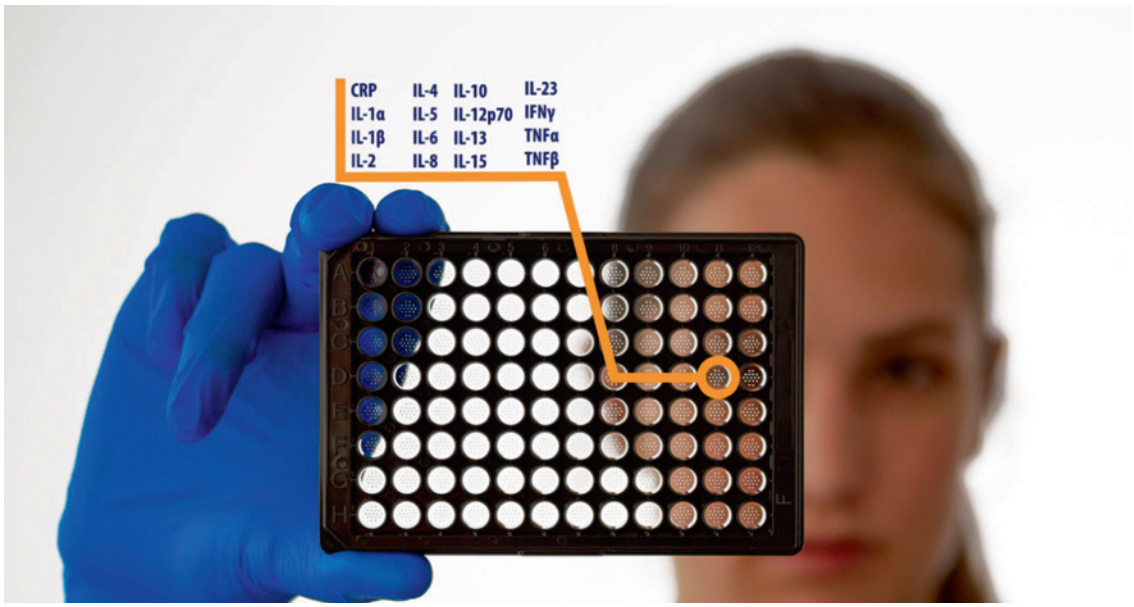
Porcine Multiplex Assays

- Porcine Cytokine – High Sensitivity (4-plex)

Quansys Multiplex Cytokine Assays - Customized

Select up to 18 Quansys analytes out of 200

- Kits are available in 96- and 384-well sizes.



Imagers

High Quality, Reproducible Chemiluminescent Imaging

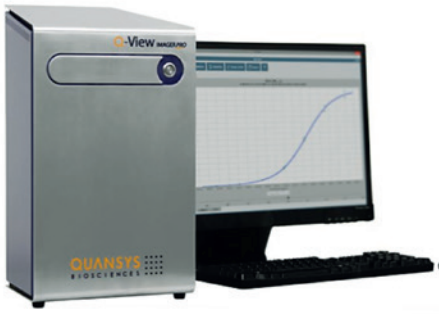
Q-View Imagers offer a high quality and reproducible solution to 96-well plate based chemiluminescent imaging and the analysis of western blot imaging.

	Q-View Imager LS
Catalog #	104150GR
Resolution	16.9 x 16.9 microns
Sensor Type	CMOS
Optics	Selected to minimize vignetting effect
Image Applications	SBS plate format and maximum blots 3 x 4 ¾ in (7.6 x 12.1 cm)
Imaging Time	4.5 minutes
Control	Q-View Software
Connection to PC	USB 2.0
Power	120-240 Volt AC 50/60 Hz
Cooling (typical)	N/A
Footprint/Dimensions	8 x 10 x 22 in (20.32 x 25.4 x 55.88 cm)
Weight	21.3 lbs (9.7 kg)

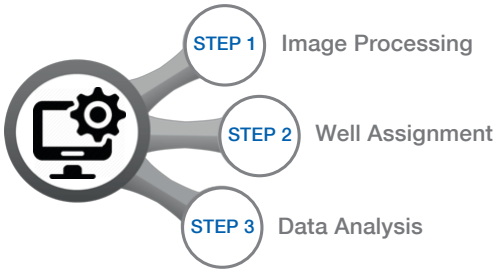
CE-certified

	Q-View Imager PRO
Catalog #	107550GR
Resolution	5.4 x 5.4 microns
Sensor Type	CCD
Optics	EF 28mm f/2.8 IS USM lens
Image Applications	SBS plate format and chemiluminescent blots 3 x 4 ¾ in (7.6 x 12.1 cm)
Imaging Time	1-5 minutes
Control	Q-View Software
Connection to PC	USB 2.0
Power	120-240 Volt AC 50/60 Hz
Cooling (typical)	Max delta –40°C
Footprint/Dimensions	10.5 x 9.5 x 18 in (26.7 x 24.1 x 45.7 cm)
Weight	28.4 lbs (12.9 kg)

CE-certified



Q-View Software - 3 Step Process



Three main software portals can be used for analysis: Image Processing, Well Assignment and Data Analysis. There are a number of features within each of these portals to meet and any and all data analysis needs.

STEP 1

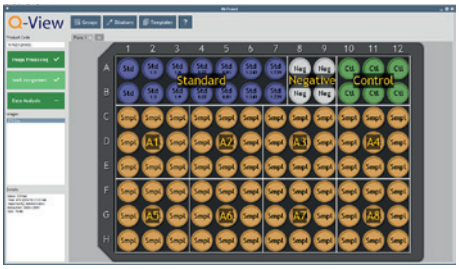
Image Processing:

Acquire images and easily locate spots using Auto-Set Plate Overlay and Auto-Adjust Spots or use Blot Tools to determine signal intensities from alternate assay types.

STEP 2

Well Assignment:

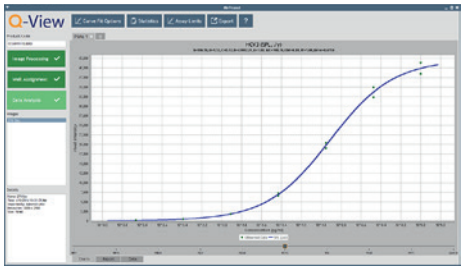
Label wells quickly via Templates and Sequential Naming, and import/export plate layouts as csv files.



STEP 3

Data Analysis:

View raw data, Auto-Select the best curve fit or manually optimize regression model settings for your data, and customize charts and reports with Statistics, Assay Limits, and Auto-Selected Dilutions.



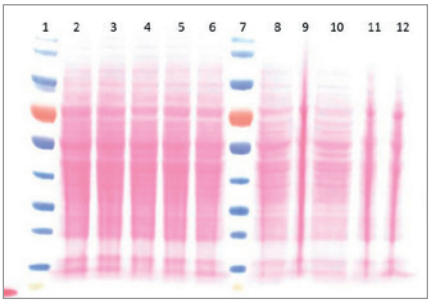
Q-View Software - Functionality

- Drives the Q-View Imager
- Time-saving “Auto” features
- Advanced acquisition algorithms to minimize the effects of noise, maximum sensitivity
- GLP compliant
- Multiple regression models including 4PL, 5PL, and point to point quantitative
- Multiple select weighing options to offset heteroscedasticity
- Outlier masking
- Pass/fail calculations to automatically detect and flag errors
- Customizable reports and charts
- Import of blot images for further analysis
- Customization & Integration
- System online or data via USB
- Unlimited number of user keys
- Barcode
- LIS connection

Software Blot Tools

A Blot image can be imported and analyzed with the Q-View software. The software allows to select a region for analysis. The regions can be rectangular, ellipse, circular, and/or polygon shaped. The sensitivity can be adjusted to include less or more pixels in the selection.

Blot Tools Report: The report consists of a custom identifier, number of pixels, mean and standard deviation.



Summary and Advantages

Assays

- Classical ELISA format
- 2 to 18 analytes on one plate
- Low sample volume of 5 to 25 ul
- Different sample types
- Decrease the need for multiple dilutions
- Measure high and low abundant proteins in the same assay (up to 10 Log Dynamic Range)
- Reduce time spent running assays
- High sensitivity
- Image detection time only 2-3 minutes
- Flexibility to select custom panels, created on demand
- Blot analysis

Imagers and Software

- Adaptable and customizable platform
- Simple and robust protocols
- Full touch screen support
- Multiple methods to analyze data
- System online or data via USB
- Unlimited number of user keys
- Barcode
- LIS connection
- GLP compliant
- CE-certified

Quansys Standard Assays

Human Angiogenesis (9-plex)			
I-150233HU			
	Units	Calibrator Range	LLD Limit
Ang-2	pg/ml	10000 - 13.72	3.9
FGF basic	pg/ml	5000 - 6.86	12.7
HGF	pg/ml	14000 - 19.2	7.2
IL-8	pg/ml	2000 - 2.74	2.7
PDGF-BB	pg/ml	4000 - 5.49	2.2
TIMP-1	pg/ml	10000 - 13.72	10.2
TIMP-2	pg/ml	20000 - 27.43	15.9
TNFα	pg/ml	4000 - 5.49	5.2
VEGF	pg/ml	2000 - 2.74	2.74

Human Chemokine (4-plex)			
I-125433HU			
	Units	Calibrator Range	LLD Limit
IL-8	pg/ml	2000 - 2.74	2.70
IP-10	pg/ml	4000 - 5.49	5.40
MCP-1	pg/ml	2000 - 2.74	2.60
Rantes	pg/ml	7800 - 10.70	3.93

Human Chemokine (9-plex)			
I-120233HU			
	Units	Calibrator Range	LLD Limit
Eotaxin	pg/ml	3000 - 4.12	1.25
GROa	pg/ml	2000 - 2.74	1.20
I-309	pg/ml	3000 - 4.12	4.10
IL-8	pg/ml	2000 - 2.74	2.70
IP-10	pg/ml	4000 - 5.49	5.40
MCP-1	pg/ml	2000 - 2.74	2.60
MCP-2	pg/ml	2000 - 2.74	2.70
Rantes	pg/ml	7800 - 10.70	3.93
TARC	pg/ml	2000 - 2.74	2.40

Human Malaria (5-Plex)			
	Units	Calibrator Range	LLD Limit
HRP2	pg/ml	0.7-2700	0.92
Pan-LDH	pg/ml	20-75000	24
Pv-LDH	pg/ml	5-20000	6
Pf-LDH	pg/ml	6-23000	8
CRP	pg/ml	11-45000	15

Human Cytokine - High Sensitivity (15-plex)			
I-112433HU			
	Units	Calibrator Range	LLD Limit
IFN-y	pg/ml	80 - 0.11	0.10
IL-1α	pg/ml	1300 - 1.78	1.40
IL-1β	pg/ml	3070 - 4.21	1.75
IL-2	pg/ml	50 - 0.07	0.07
IL-4	pg/ml	23 - 0.03	0.02
IL-5	pg/ml	360 - 0.49	0.20
IL-6	pg/ml	350 - 0.48	0.40
IL-10	pg/ml	950 - 1.30	1.10
IL-12p70	pg/ml	3000 - 4.12	3.00
IL-13	pg/ml	340 - 0.47	0.23
IL-15	pg/ml	950 - 1.30	0.43
IL-17	pg/ml	1200 - 1.65	1.48
IL-23	pg/ml	9000 - 12.35	1.50
TNFα	pg/ml	440 - 0.60	0.31
TNFβ	pg/ml	470 - 0.64	0.57

Human Cytokine - Inflammation (9-plex)			
I-110433HU			
	Units	Calibrator Range	LLD Limit
IL-1α	pg/ml	4000 - 5.49	5.43
IL-1β	pg/ml	10000 - 13.72	10.14
IL-2	pg/ml	4000 - 5.49	3.16
IL-4	pg/ml	2000 - 2.74	2.14
IL-6	pg/ml	3000 - 4.11	3.47
IL-8	pg/ml	2000 - 2.74	2.70
IL-10	pg/ml	3000 - 4.11	4.10
IFNy	pg/ml	8000 - 10.97	4.95
TNFα	pg/ml	4000 - 5.49	5.20

Human Cytokine - Screen (16-plex)			
I - 110933HU			
	Units	Calibrator Range	LLD Limit
IL-1α	pg/ml	4000 - 5.49	5.43
IL-1β	pg/ml	10000 - 13.72	10.14
IL-2	pg/ml	4000 - 5.49	3.16
IL-4	pg/ml	2000 - 2.74	2.14
IL-5	pg/ml	3000 - 4.12	2.90
IL-6	pg/ml	3000 - 4.11	3.47
IL-8	pg/ml	2000 - 2.74	2.70
IL-10	pg/ml	3000 - 4.11	4.10
IL-12p70	pg/ml	3000 - 4.12	3.20
IL-13	pg/ml	3000 - 4.12	2.86
IL-15	pg/ml	3000 - 4.12	1.92
IL-17	pg/ml	4000 - 5.49	5.40
IL-23	pg/ml	30000 - 41.15	25.00
INFy	pg/ml	8000 - 10.97	4.95
TNFα	pg/ml	4000 - 5.49	5.20
TNFβ	pg/ml	4000 - 5.49	5.29

Human Cytokine - Stripwells (16-plex)			
I-110333HU			
	Units	Calibrator Range	LLD Limit
IL-1α	pg/ml	4000 - 5.49	5.43
IL-1β	pg/ml	10000 - 13.72	10.14
IL-2	pg/ml	4000 - 5.49	3.16
IL-4	pg/ml	2000 - 2.74	2.14
IL-5	pg/ml	3000 - 4.12	2.90
IL-6	pg/ml	3000 - 4.11	3.47
IL-8	pg/ml	2000 - 2.74	2.70
IL-10	pg/ml	3000 - 4.11	4.10
IL-12p70	pg/ml	3000 - 4.12	3.20
IL-13	pg/ml	3000 - 4.12	2.86
IL-15	pg/ml	3000 - 4.12	1.92
IL-17	pg/ml	4000 - 5.49	5.40
IL-23	pg/ml	30000 - 41.15	25.00
IFN-y	pg/ml	8000 - 10.97	4.95
TNFα	pg/ml	4000 - 5.49	5.20
TNFβ	pg/ml	4000 - 5.49	5.29

Human Cytokine Panel 1 (6-plex)			
I-115233HU			
	Units	Calibrator Range	LLD Limit
IL-1β	pg/ml	10000 - 13.72	10.14
IL-6	pg/ml	3000 - 4.11	3.47
TNFα	pg/ml	4000 - 5.49	5.20
IFN-y	pg/ml	8000 - 10.97	4.95
IL-1α	pg/ml	4000 - 5.49	5.43
IL-10	pg/ml	3000 - 4.11	4.10

Human Cytokine Panel 2 (6-plex)			
I-115333HU			
	Units	Calibrator Range	LLD Limit
IL-6	pg/ml	3000 - 4.11	3.47
IL-8 LLD Limit	pg/ml	2000 - 2.74	2.70
TNFα	pg/ml	4000 - 5.49	5.20
IFN-y	pg/ml	8000 - 10.97	4.95
IL-4	pg/ml	2000 - 2.74	2,14
IL-10	pg/ml	3000 - 4.11	4.10

Human Micronutrient (7-plex)			
I-565149HU			
	Units	Calibrator Range	LLD Limit
AGP	g/L	0.36 - 0.0005	0.0019
CRP	mg/L	5.61 -0.0077	0.006
Ferristin	µg/L	155 - 0.1578	0.2057
sTfR	mg/L	107 - .0.1468	0.1917
RBP4	µmol/L	1.01 - 0.0014	0.0054
Tg	µg/L	13.7 - 0.0188	0.0244
HRP2	µg/L	0.96 - 0.0013	0.0017

Human Female Hormone (8-plex)			
I-332149HU			
	Units	Calibrator Range	LLD Limit
Adiponectin	ng/ml	28.3 - 0.12	1.64
Cortisol	ng/ml	744 - 1.02	6.45
C-Peptide	ng/ml	39 - 0.16	0.16
E1G	ng/ml	522 - 0.72	0.50
FHS	mIU/ml	167 - 0.69	2.30
HCGb	ng/ml	50 - 0.07	0.05
IL-6	pg/ml	1500 - 6.1	3.47
IL-10	pg/ml	666 - 2.7	4.10

Human MMP (6-plex)			
I-340949HU			
	Units	Calibrator Range	LLD Limit
MMP-1	pg/ml	12000 - 49.38	5.40
MMP-2	pg/ml	80000 - 329.22	96
MMP-3	pg/ml	4500 - 18.52	4.90
MMP-7	pg/ml	1800 -7.41	4.60
MMP-9	pg/ml	44000 - 181.07	43.50
MMP-13	pg/ml	35000 - 144.03	42

Human Cytokine (4-Plex)			
I-115433HU			
	Units	Calibrator Range	LLD Limit
IL-6	pg/ml	11.04.00	3.47
TNFα	pg/ml	4000 - 5.49	5.20
IFN-Y	pg/ml	8000 - 10.97	4.95
IL10	pg/ml	11.04.00	4.10

Mouse Cytokine Inflammation (14-plex)			
I-110449MS			
	Units	Calibrator Range	LLD Limit
GMCSF	pg/ml	2000 - 2.74	2.30
IL-1α	pg/ml	5000 - 6.86	4.20
IL-1β	pg/ml	14000 - 19.20	12.41
IL-2	pg/ml	5000 - 6.86	3.44
IL-3	pg/ml	5000 - 6.86	3.18
IL-4	pg/ml	5000 - 6.86	2.50
IL-6	pg/ml	5000 - 6.86	2.90
IL-10	pg/ml	2000 - 2.75	3.00
IL-12p70	pg/ml	12000 - 16.46	12.20
IL-17	pg/ml	10000 - 13.72	6.20
MCP-1	pg/ml	3000 - 4.12	3.40
MIP-1α	pg/ml	5000 - 6.86	0.61
RANTES	pg/ml	3000 - 4.12	2.15
TNFα	pg/ml	3000 - 4.12	3.40

Mouse Cytokine Panel 1 (6-plex)			
I-115249MS			
	Units	Calibrator Range	LLD Limit
IFN-y	pg/ml	8000 - 10.97	5.40
IL-1α	pg/ml	5000 - 6.86	4.20
IL-1β	pg/ml	14000 - 19.20	12.41
IL-6	pg/ml	5000 - 6.86	2.90
IL-10	pg/ml	2000 - 2.74	3.00
TNFα	pg/ml	3000 - 4.12	3.40

Mouse Cytokine Panel 2 (4-plex)			
I-115549MS			
	Units	Calibrator Range	LLD Limit
IFN-y	pg/ml	8000 - 10.97	5.40
IL-1β	pg/ml	14000 - 19.20	12.41
IL-6	pg/ml	5000 - 6.86	2.90
TNFα	pg/ml	3000 - 4.12	3.40

Mouse Cytokine Panel 2 (6-plex)			
I-115349MS			
	Units	Calibrator Range	LLD Limit
IL-1β	pg/ml	14000 - 19.20	12.41
IL-10	pg/ml	2000 - 2.74	3.00
MCP-1	pg/ml	3000 - 4.12	3.40
MIP-1α	pg/ml	5000 - 6.86	0.61
Rantes	pg/ml	3000 - 4.12	2.15
TNFα	pg/ml	3000 - 4.12	3.40

Mouse Cytokine Screen (16-plex)			
I-110949MS			
	Units	Calibrator Range	LLD Limit
GMCSF	pg/ml	2000 - 2.74	2.30
IFN-y	pg/ml	8000 - 10.97	5.40
IL-1α	pg/ml	5000 - 6.86	4.20
IL-1β	pg/ml	14000 - 19.20	12.41
IL-2	pg/ml	5000 - 6.86	3.44
IL-3	pg/ml	5000 - 6.86	3.18
IL-4	pg/ml	5000 - 6.86	2.71
IL-5	pg/ml	5000 - 6.86	2.50
IL-6	pg/ml	5000 - 6.86	2.90
IL-10	pg/ml	2000 - 2.74	3.00
IL-12p70	pg/ml	12000 - 16.46	10.20
IL-17	pg/ml	10000 - 13.72	6.20
MCP-1	pg/ml	3000 - 4.12	3.40
MIP-1α	pg/ml	5000 - 6.86	0.61
RANTES	pg/ml	3000 - 4.12	2.15
TNFα	pg/ml	3000 - 4.12	3.40

Mouse Cytokine Panel 1 (4-plex)			
I-115449MS			
	Units	Calibrator Range	LLD Limit
MCP-1	pg/ml	3000 - 4.12	3.40
MIP-1α	pg/ml	5000 - 6.86	0.61
Rantes	pg/ml	3000 - 4.12	2.15
TNFα	pg/ml	3000 - 4.12	3.40

Mouse Cytokine - Stripwells (16-plex)			
I-110349MS			
	Units	Calibrator Range	LLD Limit
IL-1α	pg/ml	5000 - 6.86	4.20
IL-1β	pg/ml	14000 - 19.20	12.41
IL-2	pg/ml	5000 - 6.86	3.44
IL-3	pg/ml	5000 - 6.86	3.18
IL-4	pg/ml	5000 - 6.86	2.71
IL-5	pg/ml	5001 - 6.86	2.50
IL-6	pg/ml	5000 - 6.86	2.90
IL-10	pg/ml	2000 - 2.74	3.00
IL-12p70	pg/ml	12000 - 16.46	10.20
IL-17	pg/ml	10000 - 13.72	6.20
MCP-1	pg/ml	3000 - 4.12	3.40
IFN-y	pg/ml	8000 - 10.97	5.40
TNFα	pg/ml	3000 - 4.12	3.40
MIP-1α	pg/ml	5000 - 6.86	0.61
GMCSF	pg/ml	2000 - 2.74	2.30
RANTES	pg/ml	3000 - 4.12	2.15

Porcine Cytokine - High Sensitivity (4-plex)			
I-119149PC			
	Units	Calibrator Range	LLD Limit
IL-1β	pg/ml	1550 - 2.13	2.10
IL-6	pg/ml	1800 - 2.47	2.50
IL-8	pg/ml	2100 - 2.88	2.90
TNFα	pg/ml	1600 - 2.19	1.90

Rat Cytokine - Screen (9-plex)			
I - 110449RT			
	Units	Calibrator Range	LLD Limit
IFNy	pg/ml	17343 - 23.79	18.40
IL-1α	pg/ml	17705 - 24.29	17.50
IL-1β	pg/ml	19221 - 26.37	15.00
IL-2	pg/ml	81609 - 111.95	89.70
IL-4	pg/ml	7055 - 9.68	3.18
IL-6	pg/ml	136761 - 187.60	94.70
IL-10	pg/ml	7814 - 10.72	5.21
IL-12p70	pg/ml	50464 - 69.22	45.10
TNFα	pg/ml	28218 - 38.71	22.60

Singleplex Kits

Parameter	Catalog Number
Adiponectin	462149HU
Adipsin	462249HU
AGP	470049HU
Ang-2	462349HU
CD-14	462449HU
CD-163	462549HU
CD-26	462649HU
Cortisol	462749HU
C-Peptide	462849HU
CRP	462949HU
CTACK	463049HU
CXCL-5	463149HU
E1G	463249HU
E2	463349HU
Eotaxin	463449HU
Ferritin	470149HU
FGF	463549HU
Fractalkine	463649HU
FSH	463749HU
GCSF	463849HU
Ghrelin	463949HU
Glucagon	464049HU
GMCSF	464149HU
GROa	464249HU
HCGb	464349HU
HGF	464449HU
HRP2	470349HU
I-309	464549HU
IFNy	464649HU
IFNy HS	460249HU
IL-10	464749HU
IL-10 HS	460349HU
IL-12p40	464849HU
IL-12p70	464949HU
IL-12p70 HS	460449HU

Parameter	Catalog Number
IL-13	465049HU
IL-13 HS	460549HU
IL-15	465149HU
IL-15 HS	460649HU
IL-16	465249HU
IL-17	465349HU
IL-17 HS	460749HU
IL-1a	465449HU
IL-1a HS	460849HU
IL-1b	465549HU
IL-1b HS	460949HU
IL-1ra	465649HU
IL-2	465749HU
IL-2 HS	461049HU
IL-21	465849HU
IL-22	465949HU
IL-23	466049HU
IL-23 HS	461149HU
IL-27	466149HU
IL-4	466249HU
IL-4 HS	461249HU
IL-5	466349HU
IL-5 HS	461349HU
IL-6	466449HU
IL-6 HS	461449HU
IL-6R	466549HU
IL-7	466649HU
IL-8	466749HU
IP-10	466849HU
Leptin	466949HU
MCP-1	467049HU
MCP-2	467149HU
MCP-3	467249HU
MIG	467349HU
MIP-1a	467449HU

Parameter	Catalog Number
MIP-1b	467549HU
MMP 13	467649HU
MMP 2	467749HU
MMP 3	467849HU
MMP 7	467949HU
MMP 9	468049HU
MMP1	468149HU
MPO	468249HU
P4	468349HU
PAI-1	468449HU
PDG	468549HU
PDGF	468649HU
PF-4	468749HU
P-Selectin	468849HU
RANTES	468949HU
RBP4	469049HU
Resistin	469149HU
S100A9	469249HU
sFAS	469349HU
sTfR	470249HU
TARC	469449HU
Tg	470449HU
TGFb	447249HU
TIMP-1	469549HU
TIMP-2	469649HU
TNFa	469749HU
TNFa HS	461549HU
TNFb	469849HU
TNFb HS	461649HU
TNFRI	469949HU
TNFRII	460049HU
VEGF	460149HU

Validated Parameters for Customized Assays

Validated Human Assys for Inclusion in Custom Q-Plex Arrays					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
Adiponectin	28,3	0,12	ng/ml	Urine/Serum/EDTA Plasma	
Adipsin	16,6	0,02	ug/ml	Serum/EDTA Plasma	
AGP	0,4	0,0005	g/L	Serum/EDTA Plasma	
Ang-2	10000	13,72	pg/ml	Serum/EDTA Plasma	
BDNF	TBD	TBD	TBD	Serum/EDTA Plasma	
CD-14	31700	43,48	pg/ml	Serum/EDTA Plasma	
CD-163	412100	565,29	pg/ml	Serum/EDTA Plasma	
CD-26	600000	823,05	pg/ml	Serum/EDTA Plasma	
CEA	TBD	TBD	TBD	Serum/EDTA Plasma	
Cortisol	744	1,02	ng/ml	Urine	
C-Peptide	39	0,16	ng/ml	Urine/Serum	
CRP (two options)	50 / 150,000	0,07	mg/L	Serum/EDTA Plasma	
CTACK	1650	2,26	pg/ml	Serum/EDTA Plasma	
CXCL-5	2500	3,43	pg/ml	Serum/EDTA Plasma	
CYFRA-21	TBD	TBD	TBD	Serum/EDTA Plasma	
E1G*	522	0,72	ng/ml	Urine	
E2*	2500	3,43	ng/ml	Urine	
EGF	TBD	TBD	TBD	Serum/EDTA Plasma	
Eotaxin	3000	4,12	pg/ml	Serum/EDTA Plasma	
Eotaxin-3	TBD	TBD	TBD	Serum/EDTA Plasma	
Ferritin	115	0,1578	µg/L	Serum/EDTA Plasma	
FGF	5000	6,86	pg/ml	Serum/EDTA Plasma	
Fractalkine	13500	18,52	pg/ml	Serum/EDTA Plasma	
FSH	167	0,69	mIU/ml	Urine	
GCSF	4600	6,31	pg/ml	Serum/EDTA Plasma	
Ghrelin	2300	3	pg/ml	Serum/EDTA Plasma	
Glucagon	2500	3	pg/ml	Serum/EDTA Plasma	
GMCSF	6000	8,23	pg/ml	Serum/EDTA Plasma	
GROa	2000	2,74	pg/ml	Serum/EDTA Plasma	
HCGb	14,1	0,06	ng/ml	Urine	
HGF	14000	19,2	pg/ml	Serum/EDTA Plasma	
HRP2	1	0,0013	µg/L	Serum/EDTA Plasma	
I-309	3000	4,12	pg/ml	Serum/EDTA Plasma	
IFNa	3500	4,8	pg/ml	Serum/EDTA Plasma	
IFNb	19000	26,06	pg/ml	Serum/EDTA Plasma	
IFNL	12000	16,46	pg/ml	Serum/EDTA Plasma	
IFNo	4050	5,56	pg/ml	Serum/EDTA Plasma	
IFNy	8000	10,97	pg/ml	Serum/EDTA Plasma	X
IL-10	3000, 666(FH)	4.11, 2.7	pg/ml	Serum/EDTA Plasma	
IL-12p40	4000	5,49	pg/ml	Serum/EDTA Plasma	

Validated Human Assys for Inclusion in Custom Q-Plex Arrays					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
IL-12p70	3000	4,12	pg/ml	Serum/EDTA Plasma	X
IL-13	3000	4,12	pg/ml	Serum/EDTA Plasma	X
IL-15	3000	4,12	pg/ml	Serum/EDTA Plasma	X
IL-16	6600	9,05	pg/ml	Serum/EDTA Plasma	
IL-17	4000	5,49	pg/ml	Serum/EDTA Plasma	X
IL-1a	4000	5,49	pg/ml	Serum/EDTA Plasma	X
IL-1b	10000	13,72	pg/ml	Serum/EDTA Plasma	X
IL-1ra	5500	7,54	pg/ml	Serum/EDTA Plasma	
IL-2	4000	5,49	pg/ml	Serum/EDTA Plasma	X
IL-2 RA	TBD	TBD	TBD	Serum/EDTA Plasma	
IL-21	2000	2,74	pg/ml	Serum/EDTA Plasma	
IL-22	65000	89,16	pg/ml	Serum/EDTA Plasma	
IL-27	67000	91,91	pg/ml	Serum/EDTA Plasma	
IL-4	2000	2,74	pg/ml	Serum/EDTA Plasma	X
IL-5	3000	4,12	pg/ml	Serum/EDTA Plasma	X
IL-6	3000, 1500 (FH)	4.11, 6.1	pg/ml	Serum/EDTA Plasma	X
IL-6R	1250	1,71	pg/ml	Serum/EDTA Plasma	
IL-7	1000	1,37	pg/ml	Serum/EDTA Plasma	
IL-8	2000	2,74	pg/ml	Serum/EDTA Plasma	
IP-10	4000	5,49	pg/ml	Serum/EDTA Plasma	X
Leptin	50	0,07	ng/ml	Serum/EDTA Plasma	
MCP-1	2000	2,74	pg/ml	Serum/EDTA Plasma	
MCP-2	2000	2,74	pg/ml	Serum/EDTA Plasma	
MCP-3	130	0,18	pg/ml	Serum/EDTA Plasma	
MCSF-1	TBD	TBD	TBD	Serum/EDTA Plasma	
MIF	TBD	TBD	TBD	Serum/EDTA Plasma	
MIG	5000	6,86	pg/ml	Serum/EDTA Plasma	
MIP-1a	2000	8,23	pg/ml	Serum/EDTA Plasma	
MIP-1b	2000	8,23	pg/ml	Serum/EDTA Plasma	
MMP 13	35000	144,03	pg/ml	Serum/EDTA Plasma	
MMP 2	80000	329,22	pg/ml	Serum/EDTA Plasma	
MMP 3	4500	18,52	pg/ml	Serum/EDTA Plasma	
MMP 7	1800	7,41	pg/ml	Serum/EDTA Plasma	
MMP 9	44000	181,07	pg/ml	Serum/EDTA Plasma	
MMP1	12000	49,38	pg/ml	Serum/EDTA Plasma	
MPO	1560	2,14	ng/ml	Serum/EDTA Plasma	
NSE	TBD	TBD	TBD	Serum/EDTA Plasma	
P4*	200	0,27	ng/ml	Urine	
PAI-1	3000	4	pg/ml	Serum/EDTA Plasma	
PDG*	25000	34,29	ng/ml	Urine	
PDGF	4000	5,49	pg/ml	Serum/EDTA Plasma	
PDGF AB/BB	TBD	TBD	TBD	Serum/EDTA Plasma	

Validated Human Assys for Inclusion in Custom Q-Plex Arrays					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
PF-4	65000	89,16	pg/ml	Serum/EDTA Plasma	
P-Selectin*	687600	943,21	pg/ml	Serum/EDTA Plasma	
RANTES	7800	10,7	pg/ml	Serum/EDTA Plasma	
RBP4 (Two options)	1, 100	0,0014	µmol/L / ug/ml	Serum/EDTA Plasma	
Resistin	10000	89,16	pg/ml	Serum/EDTA Plasma	
s TfR	107	0,1468	mg/L	Serum/EDTA Plasma	
S100A9	35	0,05	ng/ml	Serum/EDTA Plasma	
sFAS	14600	20,03	pg/ml	Serum/EDTA Plasma	
sICAM	TBD	TBD	TBD	Serum/EDTA Plasma	
Survivin	TBD	TBD	TBD	Serum/EDTA Plasma	
TARC	2000	2,74	pg/ml	Serum/EDTA Plasma	
Tg (Thyroglobulin)	13,7	0,0188	µg/L	Serum/EDTA Plasma	
TIMP-1	10000	13,72	pg/ml	Serum/EDTA Plasma	
TIMP-2	20000	27,43	pg/ml	Serum/EDTA Plasma	
TNFa	4000	5,49	pg/ml	Serum/EDTA Plasma	X
TNFb	4000	5,49	pg/ml	Serum/EDTA Plasma	X
TNFRI	3000	4,12	pg/ml	Serum/EDTA Plasma	
TNFRII	2000	2,74	pg/ml	Serum/EDTA Plasma	
VCAM	TBD	TBD	TBD	Serum/EDTA Plasma	
VEGF	2000	2,74	pg/ml	Serum/EDTA Plasma	
YKL40	TBD	TBD	TBD	Serum/EDTA Plasma	

IL-1 Family Array					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
IL-1a	1100	1,51	pg/ml	Serum/EDTA Plasma	
IL-1b	4100	5,62	pg/ml	Serum/EDTA Plasma	
IL-1Ra	7000	9,6	pg/ml	Serum/EDTA Plasma	
IL-18	300	0,41	pg/ml	Serum/EDTA Plasma	
IL-33	350	0,48	pg/ml	Serum/EDTA Plasma	
IL-18BPa	3100	4,25	pg/ml	Serum/EDTA Plasma	
IL-1R1	5300	7,27	pg/ml	Serum/EDTA Plasma	
IL-1R2	9900	13,58	pg/ml	Serum/EDTA Plasma	
IL-1R3	4700	6,45	pg/ml	Serum/EDTA Plasma	
IL-1R4	30000	41,15	pg/ml	Serum/EDTA Plasma	
TGFb				Serum/EDTA Plasma	
Anti-Polyhistadine			NA	Bacteria cell lysate, purified protein	

Validated Mouse Assays for Inclusion in Custom Q-Plex Arrays					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
Eotaxin	4000	5,49	pg/ml	Serum	
GMCSF	2000	2,74	pg/ml	Serum	
IFNg	8000	10,97	pg/ml	Serum	
IL-1a	5000	6,86	pg/ml	Serum	
IL-1b	14000	19,2	pg/ml	Serum	
IL-2	5000	6,86	pg/ml	Serum	
IL-3	5000	6,86	pg/ml	Serum	
IL-4	5000	6,86	pg/ml	Serum	
IL-5	5000	6,86	pg/ml	Serum	
IL-6	5000	6,86	pg/ml	Serum	
IL-10	2000	2,74	pg/ml	Serum	
IL-12p70	12000	16,46	pg/ml	Serum	
IL-13	1000	1,37	pg/ml	Serum	
IL-17	10000	13,72	pg/ml	Serum	
KC	4000	5,49	pg/ml	Serum	
MCP-1	3000	4,12	pg/ml	Serum	
MDC	4000	5,49	pg/ml	Serum	
MIP-1a	5000	6,86	pg/ml	Serum	
MIP-2	20000	82,3	pg/ml	Serum	
RANTES	3000	4,12	pg/ml	Serum	
TARC	20000	27,43	pg/ml	Serum	
TCA-3	4000	5,49	pg/ml	Serum	
TNFa	3000	4,12	pg/ml	Serum	
IFNa	32000	43,9	pg/ml	Serum	
IFNb	700	0,96	pg/ml	Serum	

Validated Rat Assays for Inclusion in Custom Q-Plex Arrays					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
IFNg	17343	23,79	pg/ml	Serum/EDTA Plasma	
IL-1a	17705	24,29	pg/ml	Serum/EDTA Plasma	
IL-1b	19221	26,37	pg/ml	Serum/EDTA Plasma	
IL-2	81609	111,95	pg/ml	Serum/EDTA Plasma	
IL-4	7055	9,68	pg/ml	Serum/EDTA Plasma	
IL-6	136761	187,6	pg/ml	Serum/EDTA Plasma	
IL-10	7814	10,72	pg/ml	Serum/EDTA Plasma	
IL-12p70	50464	69,22	pg/ml	Serum/EDTA Plasma	
TNFa	28218	38,71	pg/ml	Serum/EDTA Plasma	

Validated Porcine Assays for Inclusion in Custom Q-Plex Arrays					
Parameter	Upper Range	Lower Range	Units	Validated Sample Type	High Sensitive
IL-1b	1550	2,13	pg/ml	Serum/Cell Culture	X
IL-6	1800	2,47	pg/ml	Serum/Cell Culture	X
IL-8	2100	2,88	pg/ml	Serum/Cell Culture	X
TNFa	1600	2,19	pg/ml	Serum/Cell Culture	X

Partner: