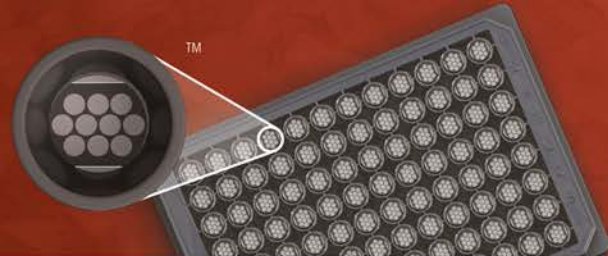


# MSD<sup>®</sup> Human TH1/TH2 10-Plex Ultra-Sensitive Kit

For quantitative determination in human serum and plasma

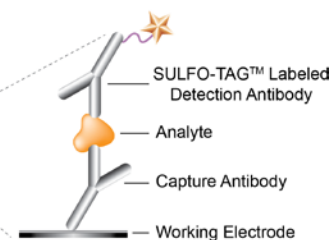
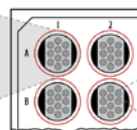


Alzheimer's Disease  
BioProcess  
Cardiac  
Cell Signaling  
Clinical Immunology  
**Cytokines**  
Hypoxia  
Immunogenicity  
Inflammation  
Metabolic  
Oncology  
Toxicology  
Vascular

- |                   |                    |
|-------------------|--------------------|
| 1 = IFN- $\gamma$ | 6 = IL-8           |
| 2 = IL-1 $\beta$  | 7 = IL-10          |
| 3 = IL-2          | 8 = IL-12p70       |
| 4 = IL-4          | 9 = IL-13          |
| 5 = IL-5          | 10 = TNF- $\alpha$ |



MSD MULTI-SPOT<sup>®</sup>  
96-Well 10-Spot Plate



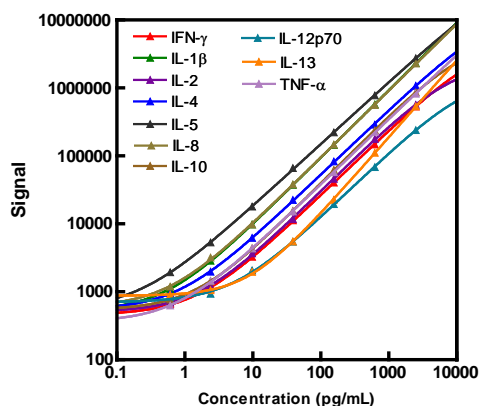
Cytokines are immunomodulating agents mediating a number of physiological responses, including immunity, inflammation, and a variety of pathophysiological conditions. In disease states, the circulating levels of cytokines are altered, making them valuable biomarkers that can be associated with many clinical conditions. MESO SCALE DISCOVERY<sup>®</sup> offers a wide range of cytokine assays in singleplex and multiplex formats. The Human TH1/TH2 10-Plex Ultra-Sensitive Kit can be used to simultaneously assess the levels of 10 cytokines in serum and plasma samples; it may also be used with sputum, bronchial lavage, wound fluids, urine, and other biological samples. Tissue culture kits are available for cell supernatant samples. Visit [www.mesoscale.com](http://www.mesoscale.com) for a complete list human, rodent, canine, bovine, and non-human primate assays.

## Catalog Numbers

Human TH1/TH2 10-Plex Ultra-Sensitive Kit	
Kit size	
1 plate	K15010C-1
5 plates	K15010C-2
25 plates	K15010C-4

## Assay Sensitivity

The following standard curves illustrate the dynamic range of the assays in the Human TH1/TH2 10-Plex Ultra-Sensitive Kit.



	IFN- $\gamma$	IL-1 $\beta$	IL-2	IL-4	IL-5
LLOD (pg/mL)	0.39	0.18	0.67	0.31	0.076

	IL-8	IL-10	IL-12p70	IL-13	TNF- $\alpha$
LLOD (pg/mL)	0.14	0.36	2.3	1.8	0.48

The lower limit of detection (LLOD) is a calculated concentration based on a signal 2.5 standard deviations above the blank (zero) calibrator. The values shown represent the average LLOD over multiple kit lots.

## Ordering information

MSD Customer Service  
Phone: 1-301-947-2085  
Fax: 1-301-990-2776  
Email: [CustomerService@mesoscale.com](mailto:CustomerService@mesoscale.com)

## Company Address

MESO SCALE DISCOVERY<sup>®</sup>  
A division of  
Meso Scale Diagnostics, LLC.  
9238 Gaither Road  
Gaithersburg, MD 20877 USA

[www.mesoscale.com](http://www.mesoscale.com)<sup>®</sup>

For Research Use Only.  
Not for use in diagnostic procedures.

## MSD Advantages

- **Multiplexing:** Multiple analytes can be measured in one well using typical sample volumes of 25  $\mu$ L or less without compromising speed or performance
- **Large dynamic range:** Linear range of up to five logs enables the measurement of native levels of biomarkers in normal and diseased samples without multiple dilutions
- **Minimal background:** The stimulation mechanism (electricity) is decoupled from the signal (light)
- **Simple protocols:** Only labels near the electrode surface are detected, enabling assays with fewer washes
- **Flexibility:** Labels are stable, non-radioactive, and conveniently conjugated to biological molecules
- **High sensitivity and precision:** Multiple excitation cycles of each label enhance light levels and improve sensitivity

For a complete list of products, please visit our website at [www.mesoscale.com](http://www.mesoscale.com)

# MSD Cytokine Assays

## Spike Recovery

Normal pooled serum and plasma samples were spiked with calibrator at multiple values throughout the range of the assay (Low range = 21–25 pg/mL; Mid range = 207–250 pg/mL; High range = 1987–2411 pg/mL). Each sample was run in triplicate.

% Recovery = measured / expected x 100

Sample Type	Level	Average % Recovery									
		IFN- $\gamma$	IL-1 $\beta$	IL-2	IL-4	IL-5	IL-8	IL-10	IL-12p70	IL-13	TNF- $\alpha$
Serum	Low	95	86	82	99	104	84	90	94	113	100
	Mid	95	90	84	101	106	88	96	103	127	103
	High	99	97	99	104	118	97	76	108	121	96
EDTA Plasma	Low	86	100	105	106	104	85	95	114	120	94
	Mid	86	101	98	102	105	94	95	105	131	94
	High	89	107	113	101	116	97	101	111	128	94
Heparin Plasma	Low	96	97	84	106	102	94	81	77	87	86
	Mid	95	95	81	109	105	97	98	96	113	84
	High	98	100	94	105	99	98	96	105	115	80

## Precision

Control samples were spiked with high, mid, and low levels of each analyte and were run in triplicate over multiple days (n>3) using multiple plate lots. Average Intra-plate %CV is the average %CV of the control replicates within an individual plate. Inter-plate %CV expresses the variability of controls across 13 plates over multiple days.

	Level	%CV									
		IFN- $\gamma$	IL-1 $\beta$	IL-2	IL-4	IL-5	IL-8	IL-10	IL-12p70	IL-13	TNF- $\alpha$
Average Intra-Plate	Low	4.9	5.7	4.3	7.9	4.1	4.7	5.3	5.3	4.6	5.8
	Mid	5.3	6.3	6.4	7.5	4.7	5.4	5.4	6.5	6.4	4.9
	High	4.7	4.3	4.8	6.6	4.5	4.9	5.4	4.9	5.8	5.5
Inter-Plate	Low	10	13	9.7	10	8.6	12	14	8.8	12	15
	Mid	6.6	11	8.5	7.5	7.9	8.9	13	6.3	11	12
	High	6.5	4.7	7.1	4.8	7.0	4.7	8.1	6.9	6.2	7.7

## Samples

Endogenous levels of the ten TH1/TH2 cytokines were quantified in normal human samples. Eight individual sera, EDTA plasma, and heparin plasma samples were measured and the concentrations are shown below. <LLOD indicates that the value was below the lower limit of detection for the assay.

		Concentration (pg/mL)									
		IFN- $\gamma$	IL-1 $\beta$	IL-2	IL-4	IL-5	IL-8	IL-10	IL-12p70	IL-13	TNF- $\alpha$
Serum	Min	<LLOD	<LLOD	<LLOD	<LLOD	0.26	1.6	<LLOD	<LLOD	<LLOD	2.0
	Max	1.0	1.8	26	0.70	4.5	10	20	34	48	4.8
	Median	0.63	0.27	<LLOD	<LLOD	0.39	7.1	0.93	7.2	<LLOD	3.6
EDTA Plasma	Min	<LLOD	0.29	<LLOD	<LLOD	0.27	4.7	<LLOD	<LLOD	<LLOD	3.8
	Max	1.0	3.2	25	<LLOD	4.4	46	29	32	48	7.3
	Median	0.77	0.47	0.73	<LLOD	0.45	6.3	0.55	3.6	<LLOD	5.2
Heparin Plasma	Min	0.43	<LLOD	<LLOD	<LLOD	0.23	1.7	<LLOD	<LLOD	<LLOD	3.8
	Max	1.2	2.0	30	<LLOD	4.5	15	29	33	44	8.5
	Median	0.92	0.85	1.0	<LLOD	0.49	5.2	0.53	12	<LLOD	6.9

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