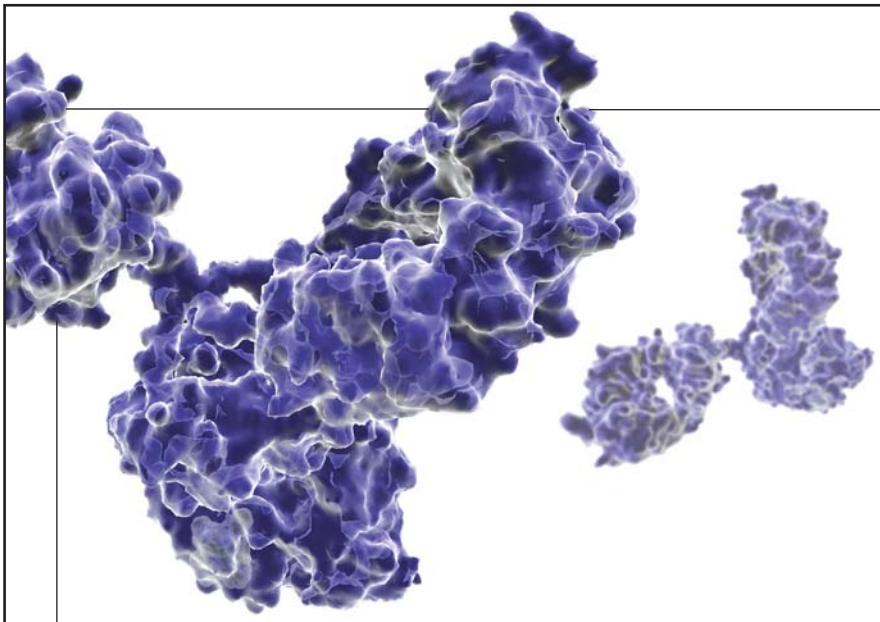
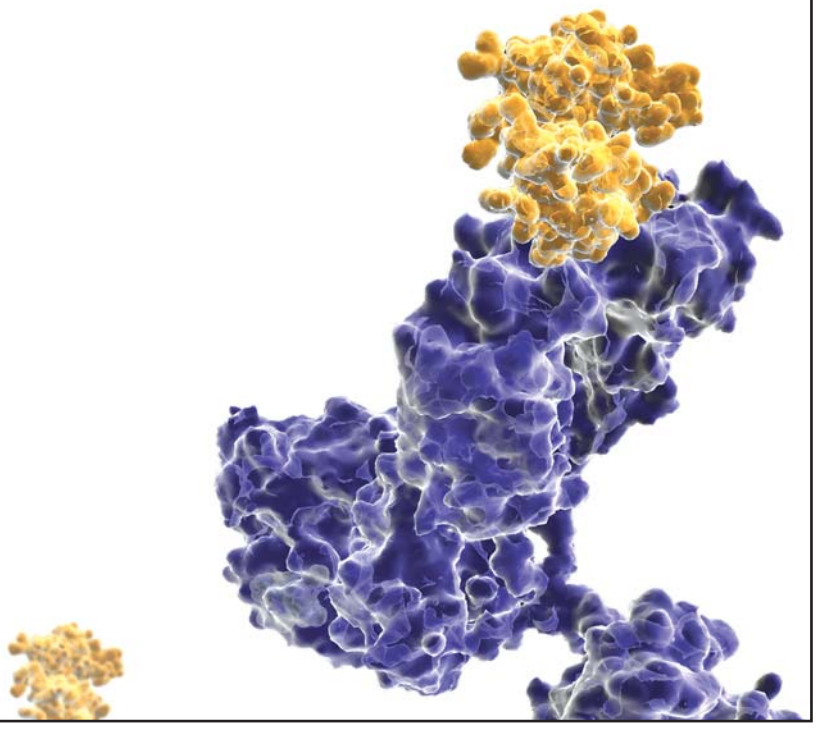


Meso Scale Discovery®

Clinical Immunology Applications

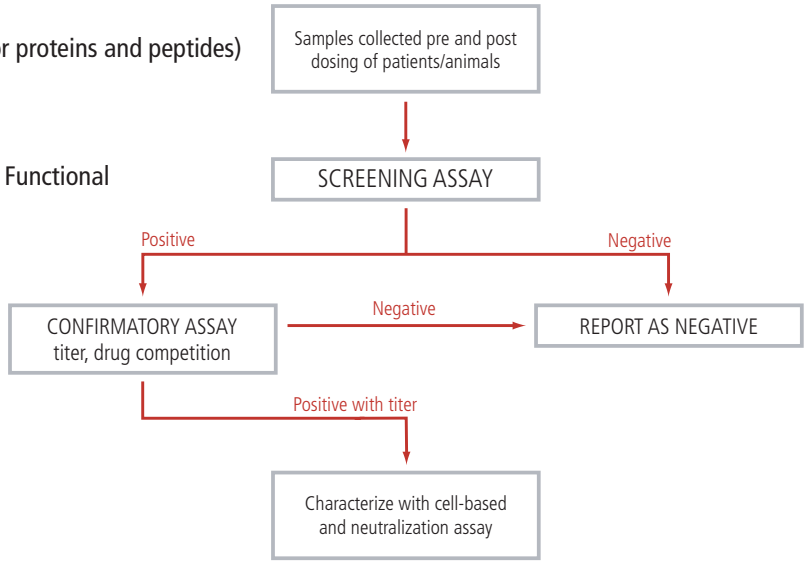


Meso Scale Discovery Clinical Immunology Applications

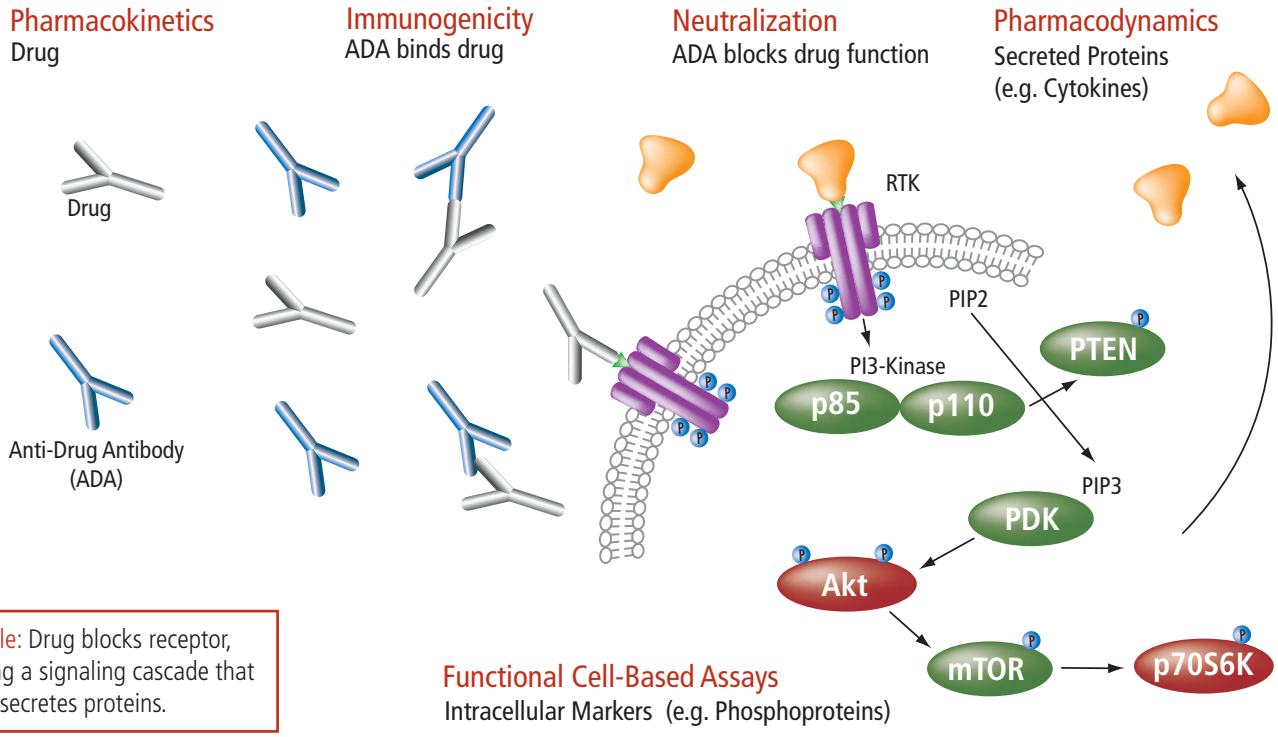
MSD Offers Assays at Each Step of the Screening Process for Immunogenicity Testing

Meso Scale Discovery's wide range of assay development materials and kits provide superior solutions for each stage of development in clinical and pre-clinical applications as compared to traditional methods. MSD assay sensitivity can be up to 100-fold better than ELISA with a large linear range of 3-4 logs. In addition, MSD assay formats minimize both matrix effects and free drug interference, improving both workflow and performance. MSD can enable you with assay kits or assay development reagents to enhance the performance of many clinical immunology applications, including:

- Immunogenicity (Bridging Assays and Direct Assays for proteins and peptides)
- Drug Tolerance
- Neutralization (Binding Assays, Cell-Based Assays, and Functional Cell-Based Assays)
- Pharmacokinetics
- Pharmacodynamics



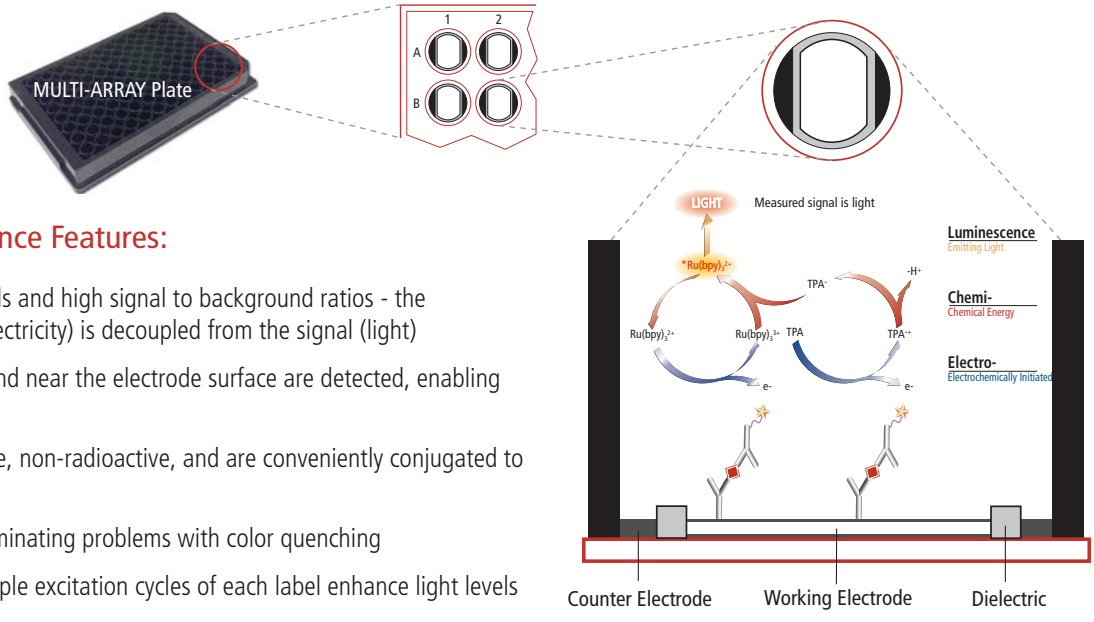
MSD Assays Cover a Wide Range of Biological Applications in Clinical Immunology



Example: Drug blocks receptor, preventing a signaling cascade that secretes proteins.

MSD Technology

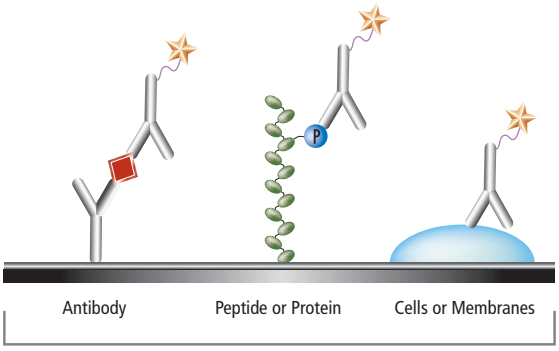
MSD's electrochemiluminescence detection technology uses SULFO-TAG™ labels that emit light upon electrochemical stimulation initiated at the electrode surfaces of MULTI-ARRAY® and MULTI-SPOT® microplates.



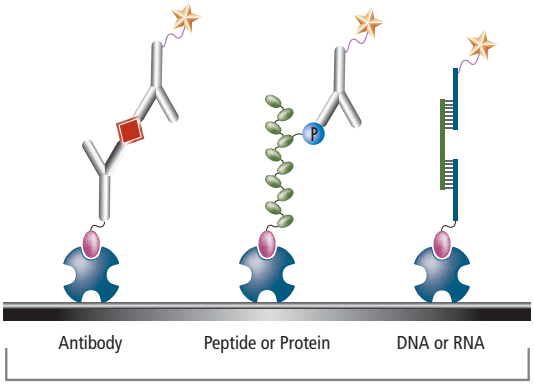
Electrochemiluminescence Features:

- Minimal background signals and high signal to background ratios - the stimulation mechanism (electricity) is decoupled from the signal (light)
- Proximity - only labels bound near the electrode surface are detected, enabling non-washed assays
- Flexibility - labels are stable, non-radioactive, and are conveniently conjugated to biological molecules
- Emission at ~620 nm - eliminating problems with color quenching
- Signal amplification - multiple excitation cycles of each label enhance light levels and improve sensitivity

Surface Chemistry



Directly Immobilized



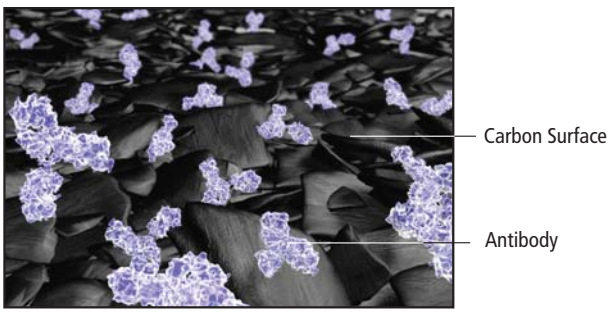
Avidin (or Streptavidin) - Biotin Coupled

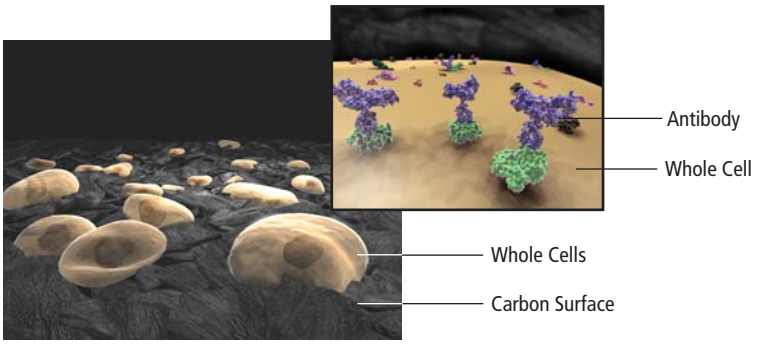
Immobilization on Uncoated Surfaces

- Capture Antibodies
- Immuno-Dot Blot Assays (Western Replacement)
- Receptor-Ligand Assays

Precoated Surfaces

- Avidin or Streptavidin
- Glutathione
- Antibodies

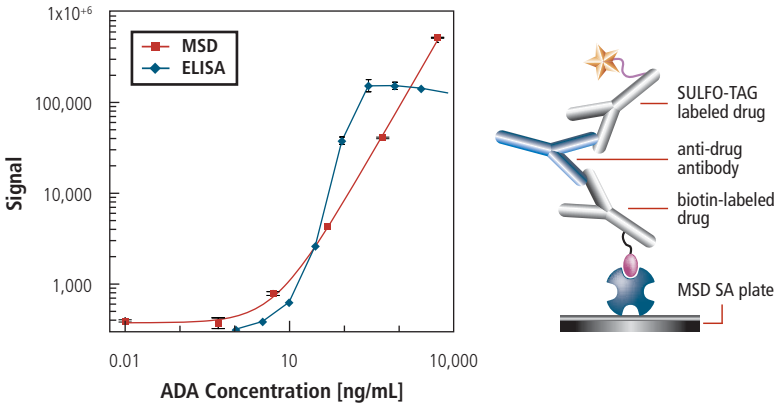




Immunogenicity

Immunogenicity testing is a crucial part of biopharmaceutical development. More stringent recommendations regarding immunogenicity assay performance necessitates the development of more robust and tolerant assays. MSD assays exhibit excellent sensitivity, precision, free drug tolerance, and minimal matrix effects. In addition, MSD assays are capable of finding low affinity antibodies during initial screens, and have a large linear range that reduces the number of required sample dilutions. Build assays for many drug types using MSD technology, including antibodies, humanized antibodies, proteins, and peptides with reagents designed to provide a variety of flexible assay formats and facilitate rapid assay development. Comparisons of MSD immunogenicity assays to the traditional ELISA format are featured below, using both a bridging assay format and direct immobilization format. Visit www.mesoscale.com for more information on immunogenicity assay development and a complete listing of materials and reagents.

Bridging Immunogenicity Assay: ELISA Comparison



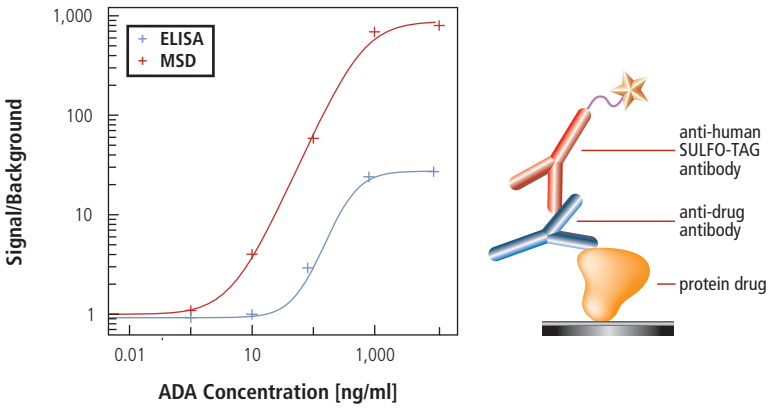
MSD assay shows comparable sensitivity to ELISA, with a larger dynamic range and a simple homogenous incubation.

	ELISA	MSD
Better Free Drug Tolerance	Poor	Excellent
Detection of Low Affinity Antibodies	No	Yes
Fewer Washes	3-4	1
High-Throughput	Good	High
Direct Conjugation of Stable Label	Yes	Yes
Improved Sensitivity	100s ng/mL	10s ng/mL
Increased Dynamic Range	1-2 logs	3-4 logs
Reduced Sample Volume	25-100 µL	5-25 µL
Higher Binding Capacity		10X More

MSD Bridging Assay Protocol

1. Combine biotin-drug, sTAG-drug and sample in polypropylene plate and incubate for 1 hour to overnight.
2. Transfer solution to pre-blocked standard streptavidin MSD plate. Incubate for 1 hour.
3. Wash assay plate; add Read Buffer T; read plate on SECTOR™ instrument.

Direct Immunogenicity Assays for Protein Drugs



Neat human serum was used as the sample matrix. The top of the curve is about 1 µg/mL for both formats, but the MSD format is 40 times more sensitive.

	ELISA	MSD
Better Free Drug Tolerance	Poor	Good
Detection of Low Affinity Antibodies	No	Maybe
Fewer Washes	3-5	2-3
High-Throughput	Good	Good
Direct Conjugation of Stable Label	No	No
Improved Sensitivity	100s ng/mL	10s ng/mL
Increased Dynamic Range	1-2 logs	3-4.5 logs
Reduction in Reagent Consumption		2-10 fold
Higher Binding Capacity		10X More

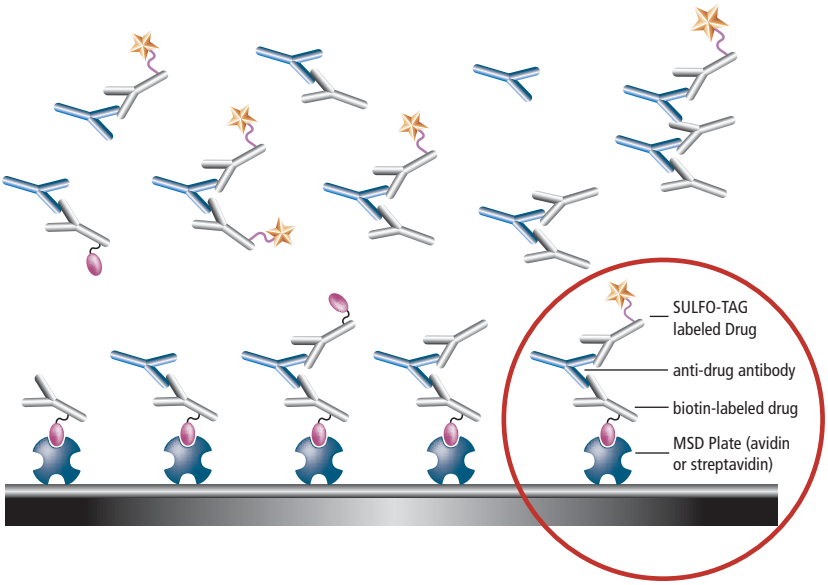
MSD Sandwich Immunogenicity Assay Protocol

1. Coat plate with drug at 0.05 to 5 pmole per well and incubate for 1 hour to overnight.
2. Add 150 µL/well of Blocking Solution and incubate for 1 hour.
3. Wash plate. Add 25 µL of sample.
4. (Optional wash). Add 25 µL of detection antibody.
5. Wash assay plate; add Read Buffer T; read plate on SECTOR instrument.

Reference: Moxness, M., Tatarewicz, S., Weeraratne, D., Murakami, N., Wullner, D., Mytych, D., Jawa, V., Koren, E., Swanson, S.J. (2005) **Immunogenicity Testing by Electrochemiluminescent Detection for Antibodies Directed against Therapeutic Human Monoclonal Antibodies.** *Clinical Chemistry.* 51: 1983-1985.

Drug Tolerance

Drug interference in immunogenicity assays from free drug in patient samples can cause false negatives and suppressed signal. Assays developed on MSD's robust technology platform demonstrate improved drug tolerance over ELISA methods for many reasons. The improved sensitivity of the MSD platform produces higher signal and lower backgrounds, leading to greater signal to background ratios, detection of low levels of drug-anti drug antibody complexes. The unique carbon surface of MSD plates affords a 10-100 fold increase in surface capacity over ELISA plates. Longer solution phase incubations coupled with higher levels of biotinylated or labeled drug can be utilized to bias the antibody association with the labeled material without significantly increasing background. Improved assay sensitivity allows for larger sample dilution, further reducing drug interference. MSD assays are tolerant of sample pre-treatments used to reduce drug interference including acid/base neutralization and materials such as salts, surfactants, and denaturing agents. We feature MSD bridging assays below to highlight the drug tolerance of the MSD platform as compared to traditional ELISA assays. Visit www.mesoscale.com for more information on immunogenicity assay development and a complete listing of materials and reagents.

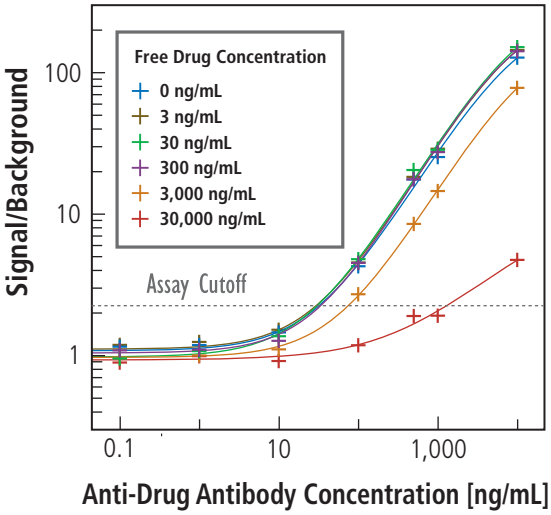


The MSD bridging assay utilizes a homogenous, solution-phase incubation that when incubated for an extended time (up to overnight), significantly reduces drug interference effects. This occurs through the dissociation of the native drug from the antibody during the extended incubation, freeing the antibody for association with biotinylated or labeled drug.

MSD assays have improved drug tolerance over ELISA

- Higher sensitivity with larger sample dilution
- Increased plate surface capacity
- Longer solution phase incubation
- Robust assays tolerant of sample pre-treatments

MSD Bridging Immunogenicity Assay in the Presence of Free Drug



An example of a bridging immunogenicity assay is shown with different levels of free drug added to the sample (sample matrix was neat human serum).

- LOQ 30 ng/mL
- No effect on assay for free drug concentrations up to 300 ng/mL
- Assay can tolerate up to 3 μg/mL free drug at 100 ng/mL of anti-drug antibody

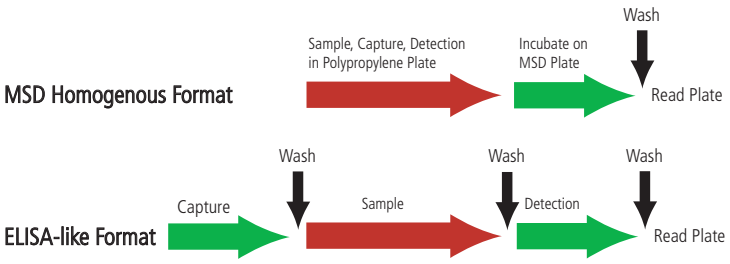
MSD Bridging Assay Protocol

1. Combine biotin-drug, SULFO-TAG drug and sample in polypropylene plate and incubate 1 hour to overnight.
2. Transfer solution to pre-blocked standard streptavidin MSD plate. Incubate for 1 hour.
3. Wash assay plate; add Read Buffer T; read plate on SECTOR instrument.

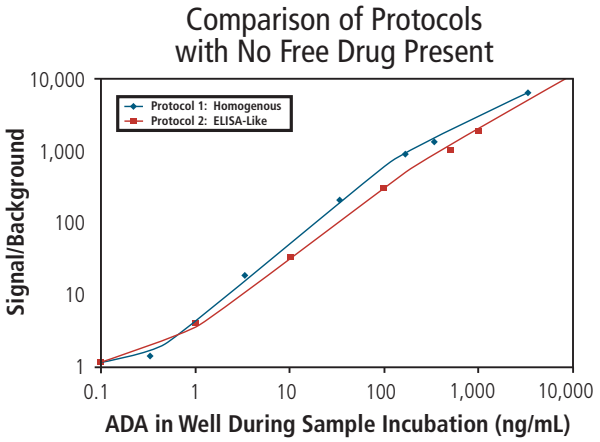
Drug Tolerance

Comparison to ELISA for Free Drug Tolerance

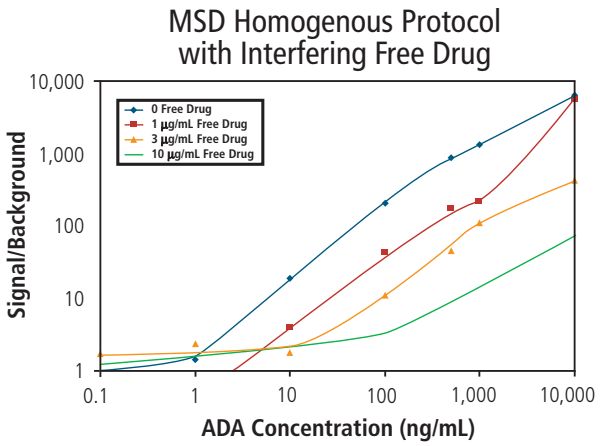
The versatility of MSD plates allows the user to test various assay formats during development and compare performance. MSD bridging assays have improved free drug tolerance over traditional ELISA assays, as previously explained, due to reasons including increased sensitivity and dynamic range. In addition, the choice of protocol format used on the MSD platform also influences drug tolerance, as seen in the protocol comparison below between the MSD homogenous protocol format and an ELISA-like format. Visit www.mesoscale.com for more information on immunogenicity assay development.

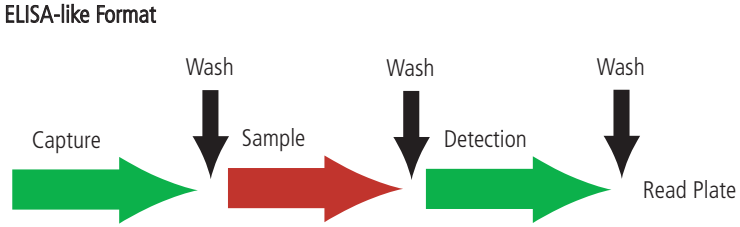


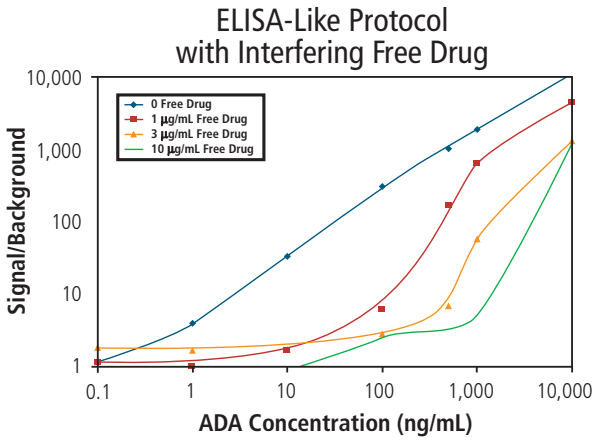
- Independent of assay protocol, the MSD electrochemiluminescent format has a large dynamic range and allows very good sensitivity
- The two formats produce similar results without the presence of free drug



- The MSD homogenous protocol format displays better free drug tolerance at lower anti-drug antibody concentrations
- At high anti-drug antibody concentrations, both protocol formats are comparable



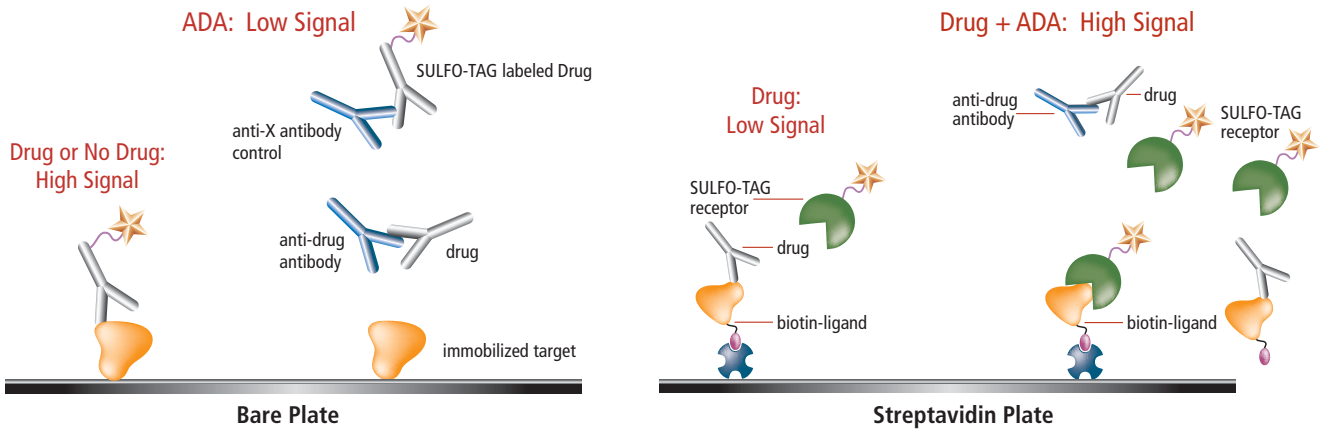




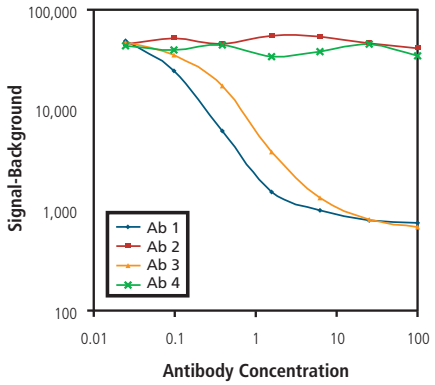
Neutralization Assays

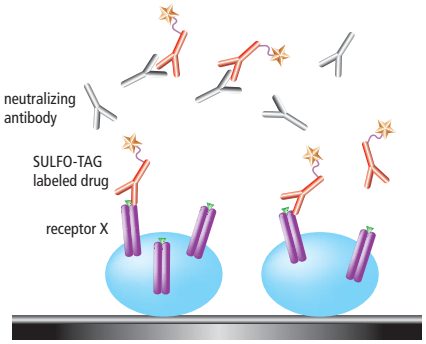
The MSD technology platform easily facilitates the development of assays for neutralizing antibodies. These assays are a key step in the development and characterization of a biological therapeutic agent, as part of the screening process for immune responses to protein and antibody drugs. MSD has successfully built neutralization assays with several clients. The versatility of MSD assay development reagents affords the choice of several types of neutralization assays, including a receptor binding/blocking assay format and a whole cell-based neutralization assay. MSD also has various assay kits available for functional cell-based assays using whole cell lysates in our Cell Signaling Pathway product line. Sample protocols for binding/ blocking and cell-based neutralization formats are outlined below, along with cell-based assay sample data. We feature a functional cell-based assay for phosphorylated VEGFR-2 as well. Visit www.mesoscale.com for a complete listing of our available assays and reagents.

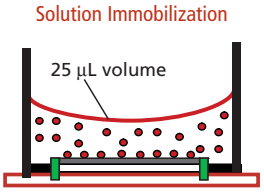
Binding/Blocking Neutralization Assays



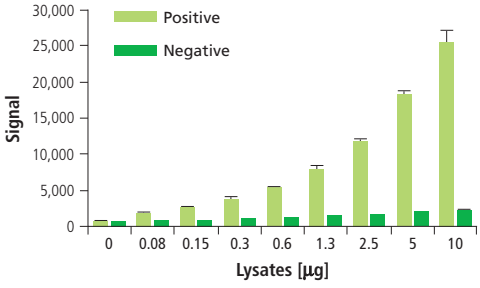
Cell Based Neutralization Assays



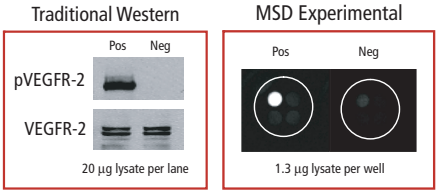




Detection of VEGFR-2 (pY1054/1059)



Lysates (µg)	pVEGFR-2 Positive			pVEGFR-2 Negative			P/N
	Average	StdDev	%CV	Average	StdDev	%CV	
0	637	64	10	591	61	10	
0.08	1,803	150	8	719	24	3	2.5
0.15	2,636	170	6	806	39	5	3.3
0.3	3,664	370	10	976	22	2	3.8
0.6	5,317	251	5	1,188	65	5	4.5
1.3	7,806	632	8	1,398	14	1	5.6
2.5	11,831	286	2	1,583	62	4	7.5
5	18,197	608	3	1,918	61	3	9.5
10	25,573	1,704	7	2,130	130	6	12.0



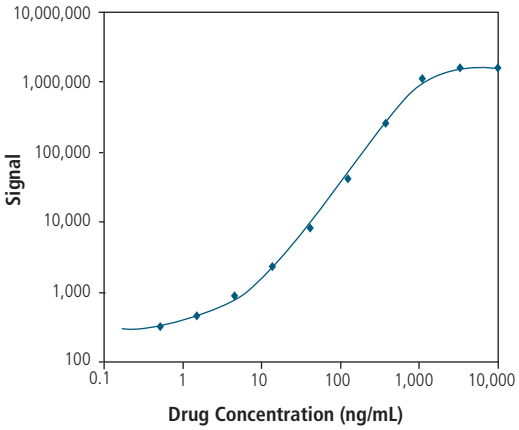
References: Gupta, S., Design and Validation of a Non Cell-Based Receptor Binding Assay for the Detection of Neutralizing Antibodies to a Biological Therapeutic. IIR Immunogenicity Meeting May 2005. (Amgen)

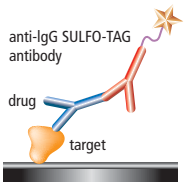
Lu Y et. al, "A high throughput electrochemiluminescent cell-binding assay for therapeutic anti-CD20 antibody selection." J. Immunol Methods. 2006 July 13; 314.

Pharmacokinetics and Pharmacodynamics

Pharmacokinetics

Pharmacokinetics is the study of the metabolism and action of drugs in the body, with emphasis on time course studies of absorption, distribution, period of action, and excretion. Pharmacokinetics assays can easily be implemented on the robust MSD platform using our flexible assay development reagents. MSD assays provide the advantages of fewer required sample dilutions due to the large dynamic range and greater sensitivity, as well as low matrix interference. A sample data set and protocol are featured below. Contact MSD for more details and visit www.mesoscale.com for a comprehensive list of assay development materials.





Protocol:

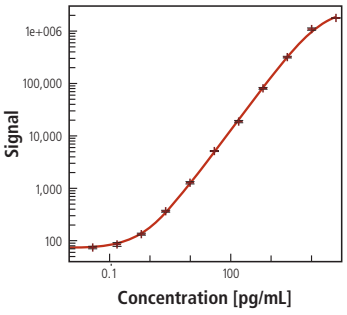
1. Coat plate with target. Incubate plate for 1 hour.
2. Add 150 µL/well of Blocker A solution mixed 1:1 with a casein blocker solution. Incubate for 1 hour.
3. Wash plate 3 times.
4. Add 25 µL/well of samples (diluted in mouse serum in example shown); Incubate for 1 hour.
5. Wash plate 3 times.
6. Add 25 µL/well of detection antibody reagent (1 µg/mL SULFO-TAG labeled anti-IgG-specific antibody or unlabeled anti-IgG-specific antibody with 1 µg/mL MSD SULFO-TAG anti-species antibody); Incubate for 1 hour.
7. Wash plate 3 times. Add 150 µL/well 1X Read Buffer T, and analyze plate on SECTOR instrument.

Pharmacodynamics

The study of pharmacodynamics examines drug mechanisms of action, as well as their exerted biochemical and physiological effects. These effects can be generated through drug interaction with specific cellular proteins, including secreted, intracellular and cell-surface proteins. MSD has an extensive menu of assays for receptors, intracellular proteins, and secreted proteins such as cytokines. MSD also offers many assay development reagents for the development of additional assays. The human TNF-α assay (ultra-sensitive kit) is featured below, illustrating results for both tissue culture and serum plasma protocols. Visit www.mesoscale.com for our complete list of cytokines and chemokines, phosphoproteins and intracellular markers, and assay development materials.

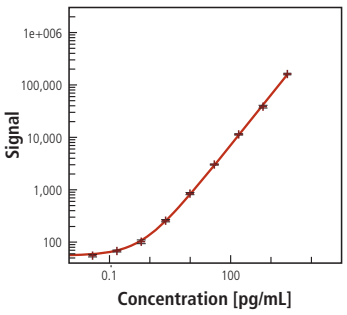
Human TNF-α Ultra-Sensitive Kit

Tissue Culture Assay



Human TNF-α US Tissue Culture		
Concentration (pg/mL)	Signal	
	Mean	%CV
0	81	7.4
0.010	74	4.5
0.038	74	5.5
0.15	85	8.2
0.61	134	4.4
2.4	365	4.2
9.8	1,275	5.1
39	5,130	2.1
156	18,732	5.0
625	80,597	3.9
2,500	317,523	3.7
10,000	1,089,784	5.1
40,000	1,776,323	1.6

Serum / Plasma Assay



Human TNF-α US Serum/Plasma		
Concentration (pg/mL)	Signal	
	Mean	%CV
0	61	10.0
0.010	59	11.3
0.038	56	5.6
0.15	68	4.3
0.61	102	8.2
2.4	258	5.0
9.8	847	4.7
39	3,036	2.1
156	11,396	2.5
625	38,595	6.0
2,500	161,589	3.5

Detection Limits

Sample Type	Detection Limit (pg/mL)
Tissue Culture	0.2
Serum/Plasma	0.3

Detection Limits were determined across multiple tests using 2.5 standard deviations above the background.

Recoveries

Sample Type	Average % Recovery
Tissue Culture	100
Serum	88
EDTA Plasma	106
Heparin Plasma	114

Spike recoveries were determined in each matrix over a range of spike levels from 9.8 to 313 pg/mL. Each spike was tested in triplicate.

Plasma data was collected using a modified plasma protocol with a reduced sample volume of 10 µL.

Endogenous Levels

Sample Type (# of unique samples)	Samples Below Detectable Range	Range
Serum (n=10)	0	1.9 - 5.3
EDTA Plasma (n=5)	1	n/d - 2.2
Heparin Plasma (n=5)	0	1.6 - 3.8

Endogenous cytokine levels (pg/mL) were determined for different sample types across multiple samples (n/d indicates cytokine level below the detection limit).

Catalog Numbers

MULTI-ARRAY Plates for the SECTOR PR Readers

Coating	Plate Format	Binding Capacity	Description	Quantity	PR100	PR400
Bare	96	Standard	96-well Plate	10-Plates	L13XA-3	L17XA-3
	96 SS	Standard	96-well Small Spot Plate	10-Plates	L43XA-3	L47XA-3
	96	High Bind	96-well High-Bind Plate	10-Plates	L13XB-3	L17XB-3
	96 SS	High Bind	96-well High-Bind Small Spot Plate	10-Plates	L43XB-3	L47XB-3
Avidin	96	Standard	96-well Avidin Plate	5-Plates	L13AA-2	L17AA-2
	96	High Bind	96-well High-Bind Avidin Plate	5-Plates	L13AB-2	L17AB-2
Streptavidin	96	Standard	96-well Streptavidin Plate	5-Plates	L13SA-2	L17SA-2
	96	High Bind	96-well High-Bind Streptavidin Plate	5-Plates	L13SB-2	L17SB-2
Glutathione	96	High Bind	96-well High-Bind Glutathione Plate	1-Plate	L13GB-1	L17GB-1
Anti-Rabbit	96	Standard	96-well GAR Plate	5-Plates	L13RA-2	L17RA-2
Anti-Mouse	96	Standard	96-well GAM Plate	5-Plates	L13MA-2	L17MA-2

MULTI-ARRAY Plates for the SECTOR Imagers

Coating	Plate Format	Binding Capacity	Description	Quantity	SI2400	SI6000
Bare	96	Standard	96-well Plate	10-Plates	L15XA-3	L11XA-3
	96 SS	Standard	96-well Small Spot Plate	10-Plates	L45XA-3	L41XA-3
	384	Standard	384-well Plate	10-Plates	L25XA-3	L21XA-3
	96	High Bind	96-well High-Bind Plate	10-Plates	L15XB-3	L11XB-3
	96 SS	High Bind	96-well High-Bind Small Spot Plate	10-Plates	L45XB-3	L41XB-3
	384	High Bind	384-well High-Bind Plate	15-Plates	L25XB-4	L21XB-4
Avidin	96	Standard	96-well Avidin Plate	5-Plates	L15AA-2	L11AA-2
	384	Standard	384-well Avidin Plate	5-Plates	L25AA-2	L21AA-2
	96	High Bind	96-well High-Bind Avidin Plate	5-Plates	L15AB-2	L11AB-2
	384	High Bind	384-well High-Bind Avidin Plate	5-Plates	L25AB-2	L21AB-2
Streptavidin	96	Standard	96-well Streptavidin Plate	5-Plates	L15SA-2	L11SA-2
	384	Standard	384-well Streptavidin Plate	5-Plates	L25SA-2	L21SA-2
	96	High Bind	96-well High-Bind Streptavidin Plate	5-Plates	L15SB-2	L11SB-2
	384	High Bind	384-well High-Bind Streptavidin Plate	5-Plates	L25SB-2	L21SB-2
Glutathione	96	High Bind	96-well High-Bind Glutathione Plate	1-Plate	L15GB-1	L11GB-1
	384	High Bind	384-well High-Bind Glutathione Plate	1-Plate	L25GB-1	L21GB-1
Anti-Rabbit (Goat)	96 SS	Standard	96-well Small Spot GAR Plate	5-Plates	L45RA-2	L41RA-2
	384	Standard	384-well GAR Plate	5-Plates	L25RA-2	L21RA-2
Anti-Mouse (Goat)	96 SS	Standard	96-well Small Spot GAM Plate	5-Plates	L45MA-2	L41MA-2
	384	Standard	384-well GAM Plate	5-Plates	L25MA-2	L21MA-2

Catalog Numbers

Read Buffers

Description	Surfactant	Quantity	Catalog Number
Read Buffer T (4X)	+	50 mL	R92TC-3
Read Buffer T (4X)	+	200 mL	R92TC-2
Read Buffer T (4X)	+	1 L	R92TC-1
Read Buffer T (4X)	-	50 mL	R92TD-3
Read Buffer T (4X)	-	200 mL	R92TD-2
Read Buffer T (4X)	-	1 L	R92TD-1
Read Buffer P (4X)	+	50 mL	R92PC-3
Read Buffer P (4X)	+	200 mL	R92PC-2
Read Buffer P (4X)	+	1 L	R92PC-1

Blockers, Diluents, and Buffers

Description	Quantity	Catalog #
Complete Blocker Kit		R93AB-1
Blocker A Kit	250 mL	R93AA-2
	1 L	R93AA-1
Antibody Diluent	50 mL	R50AA-4
	200 mL	R50AA-2
	1 L	R50AA-3
Tris Lysis Buffer	50 mL	R60TX-3
	200 mL	R60TX-2
Tris Wash Buffer (10X)	200 mL	R61TX-2
	1 L	R61TX-1

Ruthenium Products

Conjugated Reporters

MSD Label	Reporter	Quantity	Catalog Number
SULFO-TAG	Anti-Rabbit Antibody (Goat)	50 µg	R32AB-5
SULFO-TAG	Anti-Rabbit Antibody (Goat)	200 µg	R32AB-1
SULFO-TAG	Anti-Mouse Antibody (Goat)	50 µg	R32AC-5
SULFO-TAG	Anti-Mouse Antibody (Goat)	200 µg	R32AC-1
SULFO-TAG	Anti-Human Antibody (Goat)	50 µg	R32AJ-5
SULFO-TAG	Anti-Human Antibody (Goat)	200 µg	R32AJ-1
SULFO-TAG	Anti-Goat Antibody (Donkey)	50 µg	R32AG-5
SULFO-TAG	Anti-Goat Antibody (Donkey)	200 µg	R32AG-1
SULFO-TAG	Anti-Rat Antibody (Goat)	50 µg	R32AH-5
SULFO-TAG	Anti-Rat Antibody (Goat)	200 µg	R32AH-1
SULFO-TAG	Anti-Sheep Antibody (Donkey)	50 µg	R32AI-5
SULFO-TAG	Anti-Sheep Antibody (Donkey)	200 µg	R32AI-1
SULFO-TAG	Anti-GST Antibody	50 µg	R32AA-5
SULFO-TAG	Anti-GST Antibody	200 µg	R32AA-1
SULFO-TAG	Anti-Phosphotyrosine Antibody	50 µg	R32AP-5
SULFO-TAG	Anti-Phosphotyrosine Antibody	200 µg	R32AP-1
SULFO-TAG	Anti-Ubiquitinated Protein Antibody	50 µg	R32AU-5
SULFO-TAG	Anti-Ubiquitinated Protein Antibody	200 µg	R32AU-1
SULFO-TAG	Streptavidin	50 µg	R32AD-5
SULFO-TAG	Streptavidin	200 µg	R32AD-1

Labeling Reagents (NHS Ester)

Description	Quantity	Catalog Number
SULFO-TAG	150 nMoles	R91AN-1
SULFO-TAG	500 nMoles	R91AN-2
TAG	150 nMoles	R91BN-1
TAG	500 nMoles	R91BN-2

Catalog Numbers

Assay Development Kits (96-well Plates)

	PR100	PR400	SI2400	SI6000
ELISA Conversion Pack I (Uncoated Plates)	K13A01-1	K17A01-1	K15A01-1	K11A01-1
ELISA Conversion Pack II (Anti-species Plates)	K13A02-1	K17A02-1	K15A02-1	K11A02-1
ELISA Conversion Pack III (Avidin/Streptavidin Plates)	K13A03-1	K17A03-1	K15A03-1	K11A03-1
Immunogenicity Development Pack	K13A04-1	K17A04-1	K15A04-1	K11A04-1
Cell Based Assays Development Pack	K13A05-1	K17A05-1	K15A05-1	K11A05-1

Singleplex Cytokines

Analyte	Description	SI2400	SI6000
GM-CSF (Human)	Human GM-CSF Tissue Culture Kit (1 Plate) Human GM-CSF Tissue Culture Kit (5 Plates)	K151AXB-1 K151AXB-2	K111AXB-1 K111AXB-2
	Human GM-CSF Ultra-Sensitive Kit (1 Plate) Human GM-CSF Ultra-Sensitive Kit (5 Plates)	K151AXC-1 K151AXC-2	K111AXC-1 K111AXC-2
GM-CSF (Mouse)	Mouse GM-CSF Tissue Culture Kit (1 Plate) Mouse GM-CSF Tissue Culture Kit (5 Plates)	K152AXB-1 K152AXB-2	K112AXB-1 K112AXB-2
GM-CSF (Mouse)	Mouse GM-CSF Ultra-Sensitive Kit (1 Plate) Mouse GM-CSF Ultra-Sensitive Kit (5 Plates)	K152AXC-1 K152AXC-2	K112AXC-1 K112AXC-2
GM-CSF (Rat)	Rat GM-CSF Ultra-Sensitive Kit (1 Plate) Rat GM-CSF Ultra-Sensitive Kit (5 Plates)	K153AXC-1 K153AXC-2	K113AXC-1 K113AXC-2
IL-6 (Human)	Human IL-6 Tissue Culture Kit (1 Plate) Human IL-6 Tissue Culture Kit (5 Plates)	K151AKB-1 K151AKB-2	K111AKB-1 K111AKB-2
	Human IL-6 Ultra-Sensitive Kit (1 Plate) Human IL-6 Ultra-Sensitive Kit (5 Plates)	K151AKC-1 K151AKC-2	K111AKC-1 K111AKC-2
IL-6 (Mouse)	Mouse IL-6 Tissue Culture Kit (1 Plate) Mouse IL-6 Tissue Culture Kit (5 Plates)	K152AKB-1 K152AKB-2	K112AKB-1 K112AKB-2
IL-6 (Mouse)	Mouse IL-6 Ultra-Sensitive Kit (1 Plate) Mouse IL-6 Ultra-Sensitive Kit (5 Plates)	K152AKC-1 K152AKC-2	K112AKC-1 K112AKC-2
IL-6 (Rat)	Rat IL-6 Ultra-Sensitive Kit (1 Plate) Rat IL-6 Ultra-Sensitive Kit (5 Plates)	K153AKC-1 K153AKC-2	K113AKC-1 K113AKC-2
IL-8 (Human)	Human IL-8 Tissue Culture Kit (1 Plate) Human IL-8 Tissue Culture Kit (5 Plates)	K151ANB-1 K151ANB-2	K111ANB-1 K111ANB-2
	Human IL-8 Ultra-Sensitive Kit (1 Plate) Human IL-8 Ultra-Sensitive Kit (5 Plates)	K151ANC-1 K151ANC-2	K111ANC-1 K111ANC-2
IL-13 (Human)	Human IL-13 Tissue Culture Kit (1 Plate) Human IL-13 Tissue Culture Kit (5 Plates)	K151ASB-1 K151ASB-2	K111ASB-1 K111ASB-2
	Human IL-13 Ultra-Sensitive Kit (1 Plate) Human IL-13 Ultra-Sensitive Kit (5 Plates)	K151ASC-1 K151ASC-2	K111ASC-1 K111ASC-2
IL-13 (Rat)	Rat IL-13 Ultra-Sensitive Kit (1 Plate) Rat IL-13 Ultra-Sensitive Kit (5 Plates)	K153ASC-1 K153ASC-2	K113ASC-1 K113ASC-2

For research use only; not for use in diagnostic or therapeutic procedures.

Ordering Information

Purchase orders should be faxed or emailed to the following queries: TEL: 1.240.631.2522 x4685 FAX: 1.301.990.2776 EMAIL: customerservice@mesoscale.com

Singleplex Cytokines

Analyte	Description	SI2400	SI6000
TNF-α (Human)	Human TNF-α Tissue Culture Kit (1 Plate) Human TNF-α Tissue Culture Kit (5 Plates)	K151BHB-1 K151BHB-2	K111BHB-1 K111BHB-2
	Human TNF-α Ultra-Sensitive Kit (1 Plate) Human TNF-α Ultra-Sensitive Kit (5 Plates)	K151BHC-1 K151BHC-2	K111BHC-1 K111BHC-2
TNF-α (Mouse)	Mouse TNF-α Tissue Culture Kit (1 Plate) Mouse TNF-α Tissue Culture Kit (5 Plates)	K152BHB-1 K152BHB-2	K112BHB-1 K112BHB-2
TNF-α (Mouse)	Mouse TNF-α Ultra-Sensitive Kit (1 Plate) Mouse TNF-α Ultra-Sensitive Kit (5 Plates)	K152BHC-1 K152BHC-2	K112BHC-1 K112BHC-2
TNF-α (Rat)	Rat TNF-α Ultra-Sensitive Kit (1 Plate) Rat TNF-α Ultra-Sensitive Kit (5 Plates)	K153BHC-1 K153BHC-2	K113BHC-1 K113BHC-2

Multiplex Cytokines

Analyte	Description	SI2400	SI6000
Pro-Inflamatory Panel (Human) GM-CSF, IFN-γ, IL-1β, IL-2, IL-6, IL-8, IL-10, IL-12p70, TNF-α	Human Pro-Inflammatory 9-Plex Tissue Culture Kit (1 Plate) Human Pro-Inflammatory 9-Plex Tissue Culture Kit (5 Plates)	K15007B-1 K15007B-2	K11007B-1 K11007B-2
	Human Pro-Inflammatory 9-Plex Ultra-Sensitive Kit (1 Plate) Human Pro-Inflammatory 9-Plex Ultra-Sensitive Kit (5 Plates)	K15007C-1 K15007C-2	K11007C-1 K11007C-2
TH1/TH2 Panel (Human) IFN-γ, IL-1β, IL-2, IL-4, IL-5, IL-8, IL-10, IL-12p70, IL-13, TNF-α	Human TH1/TH2 10-Plex Tissue Culture Kit (1 Plate) Human TH1/TH2 10-Plex Tissue Culture Kit (5 Plates)	K15010B-1 K15010B-2	K11010B-1 K11010B-2
	Human TH1/TH2 10-Plex Ultra-Sensitive Kit (1 Plate) Human TH1/TH2 10-Plex Ultra-Sensitive Kit (5 Plates)	K15010C-1 K15010C-2	K11010C-1 K11010C-2

Phosphoproteins

Analyte	Description	SI2400	SI6000
EGFR (pY1173)	Phospho-EGFR (Tyr1173) Whole Cell Lysate Kit (1 Plate) Phospho-EGFR (Tyr1173) Whole Cell Lysate Kit (5 Plates)	K151CJD-1 K151CJD-2	K111CJD-1 K111CJD-2
EGFR (Total)	Total EGFR Whole Cell Lysate Kit (1 Plate) Total EGFR Whole Cell Lysate Kit (5 Plates)	K151CKD-1 K151CKD-2	K111CKD-1 K111CKD-2
ErbB2 (pY1248)	Phospho-ErbB2 Whole Cell Lysate Kit (1 Plate) Phospho-ErbB2 Whole Cell Lysate Kit (5 Plates)	K151CLD-1 K151CLD-2	K111CLD-1 K111CLD-2
ErbB2 (Total)	Total ErbB2 Whole Cell Lysate Kit (1 Plate) Total ErbB2 Whole Cell Lysate Kit (5 Plates)	K151DTD-1 K151DTD-2	K111DTD-1 K111DTD-2
c-Kit (pY721)	Phospho-c-Kit Whole Cell Lysate Kit (1 Plate) Phospho-c-Kit Whole Cell Lysate Kit (5 Plates)	K151DPD-1 K151DPD-2	K111DPD-1 K111DPD-2
c-Kit (Total)	Total c-Kit Whole Cell Lysate Kit (1 Plate) Total c-Kit Whole Cell Lysate Kit (5 Plates)	K151DQD-1 K151DQD-2	K111DQD-1 K111DQD-2
Met (pY1349)	Phospho-Met Whole Cell Lysate Kit (1 Plate) Phospho-Met Whole Cell Lysate Kit (5 Plates)	K151DLD-1 K151DLD-2	K111DLD-1 K111DLD-2
Met (Total)	Total Met Whole Cell Lysate Kit (1 Plate) Total Met Whole Cell Lysate Kit (5 Plates)	K151DMD-1 K151DMD-2	K111DMD-1 K111DMD-2
PDGFR-β (pY751)	Phospho-PDGFR-β Whole Cell Lysate Kit (1 Plate) Phospho-PDGFR-β Whole Cell Lysate Kit (5 Plates)	K150DVD-1 K150DVD-2	K110DVD-1 K110DVD-2
VEGFR-2 (pY1054/1059)	Phospho-VEGFR-2 Whole Cell Lysate Kit (1 Plate) Phospho-VEGFR-2 Whole Cell Lysate Kit (5 Plates)	K151DJD-1 K151DJD-2	K111DJD-1 K111DJD-2

Visit www.mesoscale.com for a complete product listing.

For research use only; not for use in diagnostic or therapeutic procedures.

9238 Gaither Road Gaithersburg, MD USA 20877 Phone: 1.240.631.2522 Fax: 1.301.990.2776 Website: www.mesoscale.com

19507-v1.67-2007Sep