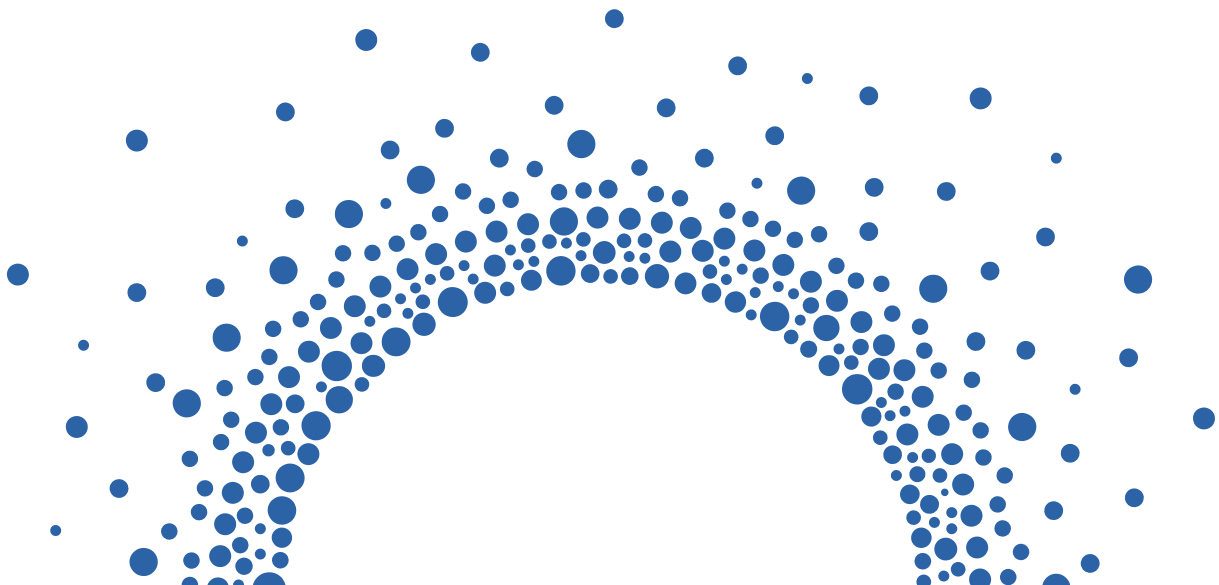
VDOBIOTECH

HiLA®

Homogeneous ImmunoLuminescence Assay



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COMPANY PROFILE

VDO Biotech Co., Ltd. is a high-tech enterprise dedicated to innovative microsphere technologies and the production of a variety of high-quality microsphere products for global customers. VDO was founded in 2014, and is headquartered in the BioBAY of Suzhou Industrial Park, China, with a total facility area of over 10,000 square meters. Committed to R&D and innovation, we hold 6 authorized patents and 17 pending patents, and have successfully acquired high-tech enterprise certification.

VDO Biotech is deeply engaged in the microsphere innovative development and large-scale production and application. We provide microspheres and technical services for both IVD and pharmaceutical applications. Our IVD microspheres include magnetic microspheres, latex microspheres, color-dyed microspheres, fluorescent microspheres, flow cytometry microspheres, and standard microspheres; while the pharmaceutical chromatographic microspheres cover gel chromatography media, affinity chromatography media, ion exchange media, hydrophobic chromatography media and multimodal chromatography media. Our products can be widely used in molecular diagnosis, immunodiagnosis, and large-scale purification of biological drugs and vaccines. We also provide customized services of various types of microspheres, large-scale microsphere conjugation services with antibodies or nucleic acid probes, OEM services for microspheres and intermediates, and complete solutions for microsphere applications.

Led by senior scientists from world-renowned universities, VDO's microsphere scientific team has established an advanced technology platform and a continuously innovative R&D system. We have always adhered to high standards of production management, and our manufacturing facilities have acquired ISO 9001:2015 certification. VDO has been endorsed by users all over the world for our high-quality products and services, and we are constantly creating new legends of core suppliers in the IVD field with higher-quality microsphere products.

To better support our partners in the IVD and pharmaceutical fields, VDO has also expanded our service scope, introduced the product line of protein raw materials, added IVD antibody raw materials, bulk package and chromatography media. With the mission of inspiring and enabling life science innovation, VDO will continue to move forward, innovate constantly, and strive to become the world's leading supplier of life science solutions and diagnostic raw materials. Our dedicated staff is your reliable partner for the solution of life science applications!

Enterprise Cultures

Vision

To be a world-class biotech company

Mission

Healthy life starts here

Values

Preciseness Innovation Collaboration Openness

Microsphere Overall Solutions

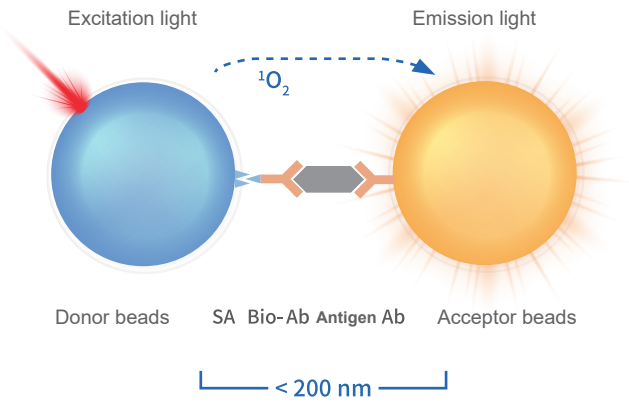
- Microsphere OEM services for global customers
- Large scale protein-microsphere conjugation services
- OEM services of microsphere intermediates
- High quality microspheres of nanometer and micrometer level
- Customized microsphere services
- Overall solution for microsphere applications
- Biomacromolecule separation and purification services
- Development of separation and purification process for biological macromolecules
- Optimization of separation and purification process for biological macromolecules
- Overall solution for separation and purification of biological macromolecules

Homogeneous ImmunoLuminescence Assay

Homogeneous ImmunoLuminescence Assay (HiLA) is a new milestone in the field of chemiluminescent immunoassays, featuring high throughput, low background, good repeatability, high sensitivity, simple operation, minimal sample requirement, and a wide detection range, making it suitable for automated detection instruments. Based on HiLA platform, VDO BIOTECH has launched a comprehensive solution covering the entire process from homogeneous microspheres, reagents, and instruments to technical development and large-scale production, providing efficient and reliable tools for clinical diagnostics and life science research.

HiLA Principle

HiLA is based on two types of nanobeads (donor beads and acceptor beads), with specific antibodies cross-linked on the surface of the beads. After incubation with the analyte, the two antibodies form a double -antibody sandwich immunocomplex with the antigen, keeping the distance between the two beads within 200 nm. Upon excitation, the donor beads generate singlet oxygen, which diffuses to the acceptor beads within 200 nm, resulting in emitted light from the acceptor beads. The light signal is collected by a photosensitive element, and the concentration of the target protein in the sample is calculated using mathematical fitting. When the analyte does not contain the target protein, no immunocomplex is formed, and the distance between the two beads exceeds 200 nm, preventing the transfer of singlet oxygen, and no emission occurs from the acceptor beads.



Technical advantages

- Homogeneous & Wash-free
- High Sensitivity & Wide Detection Range
- Broad Application & Strong Anti-interference Capability
- Good Reproducibility & Simple Operation
- High Detection Throughput

Applications

HiLA uses 680 nm long-wavelength excitation and 615 nm short-wavelength emission, combined with time-resolved fluorescence detection mode, providing low background signal and strong anti-interference capability, making it an ideal choice for detecting complex samples such as serum and plasma. The reaction system can detect within a distance of less than 200nm between donor and acceptor beads, making it highly suitable for detecting various biomolecules and complex interactions, with wide applications in clinical testing and scientific research.

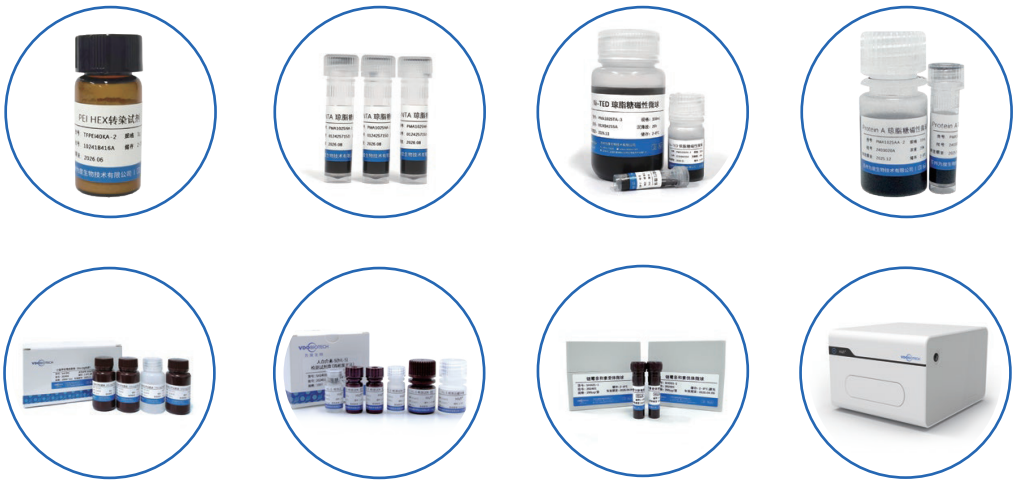
Application Fields

- Biomarker Analysis
- Protein-Protein Interaction Studies
- Drug Screening
- Cell Signaling Pathway Research
- Kinase & Enzyme Activity Assays
- Exosome Detection
- DNA & RNA Detection

New Drug Solutions

As a pioneering force in the pharmaceutical sector, innovative drugs play an irreplaceable and crucial role in advancing medical progress and improving human health. Leveraging strong in-house R&D capabilities, a comprehensive production system, and a professional marketing network, VDO Biotech is committed to providing high-quality innovative drug development solutions for domestic pharmaceutical companies, aiming to enhance the competitiveness of new drug research and development.

Target Research and Validation	Antigen Preparation and Animal Immunization	Antibody Screening and Purification	Antibody Optimization	Druggability Assessment	Animal Model Evaluation
	PEI Transfection Reagent Ni-NTA Agarose Magnetic Beads Ni-TED Agarose Magnetic Beads	Monoclonal Antibody Screening Kit IgG Detection Reagent Protein A Agarose Magnetic Beads	IgG Detection Reagent Cytokine Detection Reagent PEI Transfection Reagent Protein A Agarose Magnetic Beads		



* For detailed product information regarding transfection reagents and agarose magnetic beads, please visit www.vdobiotech.com or email to sales@vdobiotech.com.

IgG Kits [Broad Range]

In the early stages of antibody drug development and during process development, quantitative detection of IgG is frequently required to ensure the quality of the final product in large-scale production. Therefore, accurate and rapid determination of IgG content is crucial for antibody drug R&D. Traditional ELISA methods face a series of challenges, including low detection throughput, lengthy experimental procedures, and high sample consumption.

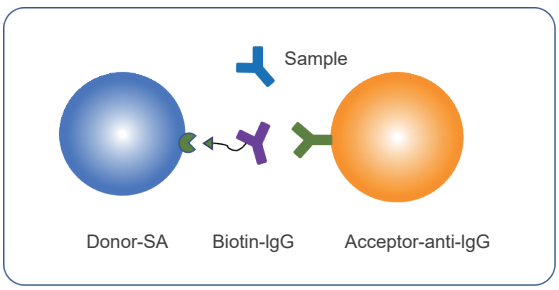
The VDO HiLA IgG Detection Kit helps customers overcome these issues. This series of IgG detection kits can be used for the detection of total human & mouse IgG and various IgG subtypes in cell culture supernatants, serum, or purified samples. It meets the detection needs for multiple scenarios, such as IgG content measurement in early-stage research and high-yield cell line screening during process development.

Product Advantages

- Broad Detection Range: Cell culture supernatants can be detected directly without the need for dilution.
- No Sample Purification Required: Eliminates lengthy antibody purification steps, simplifying the workflow.
- Easy and Fast Operation: Detection can be completed in as little as 30 minutes, meeting high-throughput requirements.
- Micro-volume Detection: Requires only 2-10 µL of sample, suitable for the analysis of precious samples.

Principle of IgG Detection (Competitive Method)

The kit's core components include receptor beads conjugated with anti-IgG antibody (R1), biotinylated IgG (R2), and donor beads conjugated with streptavidin (R3).
In the detection system, the receptor beads conjugated with anti-IgG antibody are mixed and incubated with the biotinylated IgG to form an immune complex, which then reacts with the donor beads to form a luminescent complex.
Upon excitation with 680 nm light, the donor beads generate singlet oxygen, which diffuses to the receptor beads. The receptor beads then accept this energy and emit light at 615 nm.
When the sample contains IgG, it competitively binds to the anti-IgG antibody, hindering the formation of the luminescent complex. The concentration of IgG in the sample is inversely proportional to the light signal. The light signal is collected by a photosensor, and the IgG concentration in the sample is calculated using a mathematical fitting model.



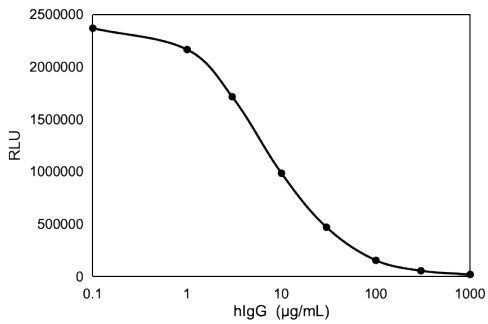
IgG Assay Kit Selection Guide

Product	Human Total IgG Kit	Human IgG1 Kit	Mouse Total IgG Kit	Mouse IgG1 Kit	Mouse IgG2a Kit	Mouse IgG2b Kit
Catalog Number	SH2218	SH2501	SH2505	SH2506	SH2507	SH2508
Detection Range	0-1000 µg/mL					
Limit of Blank	0.58 µg/mL	0.39 µg/mL	0.74 µg/mL	0.61 µg/mL	0.23 µg/mL	0.60 µg/mL
Repeatability						
-Low Concentration	3.90%	5.20%	2.31%	3.82%	1.25%	2.28%
-High Concentration	3.30%	3.00%	2.71%	1.62%	1.49%	3.34%
Accuracy						
-Low Concentration	2.10%	6.70%	6.85%	3.45%	-0.65%	-7.19%
-High Concentration	-4.50%	2.30%	8.25%	4.17%	2.03%	-5.98%
Sample Type	Natural Human IgG	Known Human IgG Subtype	Natural Mouse IgG	Known Mouse IgG Subtype		

Performance Demonstration

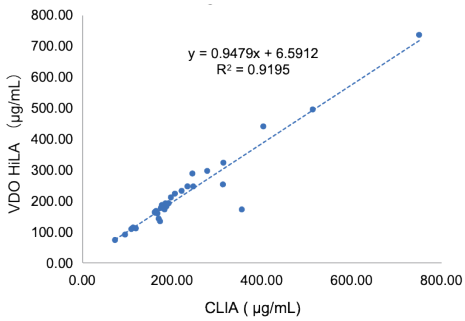
This series of kits all feature a wide dynamic range of 0-1000 μg/mL. Samples require neither dilution nor purification, making them suitable for the direct detection of samples such as high-concentration cell culture supernatants.
Compared with methodologies like HPLC and CLIA, they have demonstrated good sample correlation.

Dynamic Range of Total IgG Kit(Human)



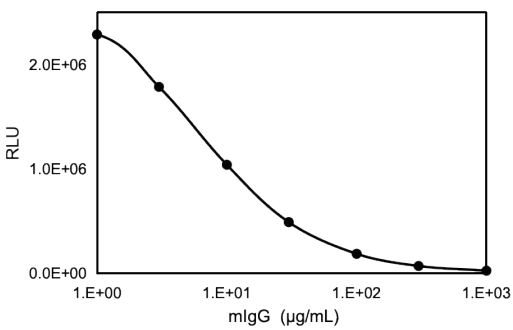
- Dynamic range: 0-1000 μg/mL

Sample Correlation of Total IgG Kit(Human)



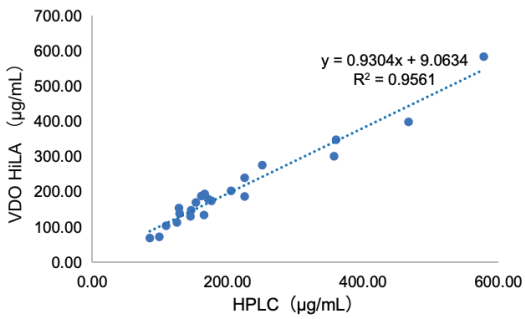
- Correlation with Siemens chemiluminescence results (n=30), r= 0.9589
- Sample type: Human serum.

Dynamic Range of Total IgG Kit(Mouse)



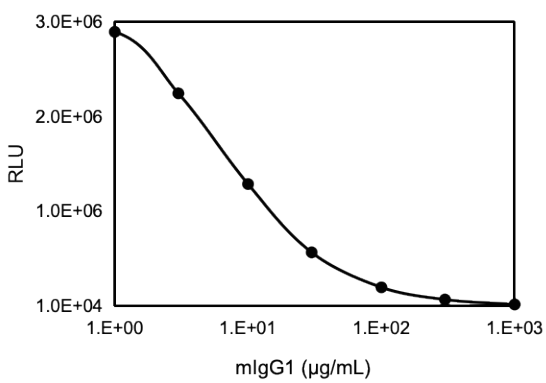
- Dynamic range: 0-1000 μg/mL

Sample Correlation of Total IgG Kit(Mouse)



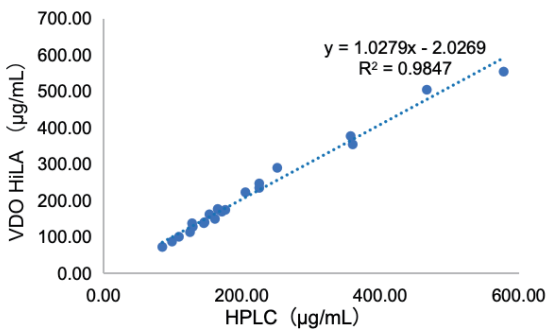
- Correlation with HPLC results (n=22), r= 0.9778
- Sample type: Supernatant.

Dynamic Range of IgG1 Kit(Mouse)



- Dynamic range: 0-1000 μg/mL

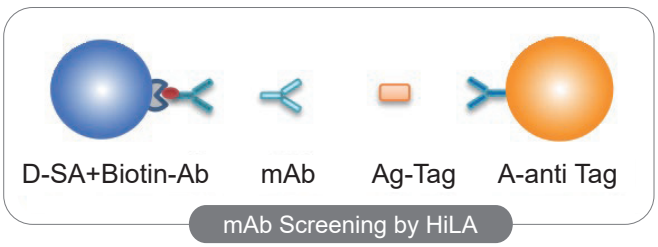
Sample Correlation of IgG1 Kit(Mouse)



- Correlation with HPLC results (n=22), r= 0.9923
- Sample type: Supernatant.

Monoclonal Antibody Screening Kits

In the early-stage research and development of antibody drugs, efficient in vitro screening and functional assays are critical steps that determine the success of candidate molecules. Traditional methods (e.g., ELISA) are often time-consuming and operationally cumbersome, becoming a bottleneck in R&D efficiency. The VDO HiLA Platform provides an efficient and precise solution. It requires no washing steps, delivering highly sensitive quantitative results through a simple add-and-incubate procedure. The platform supports high-throughput detection, dramatically increasing throughput while achieving cost-effectiveness and efficiency gains. It reduces manual operations, shortens assay time, and accelerates the R&D process. In the antibody screening stage, VDO offers Mouse/Human Monoclonal Antibody Screening Kits, enabling rapid identification of positive clones from hybridoma supernatants. This significantly enhances screening efficiency and lays a solid foundation for subsequent development.

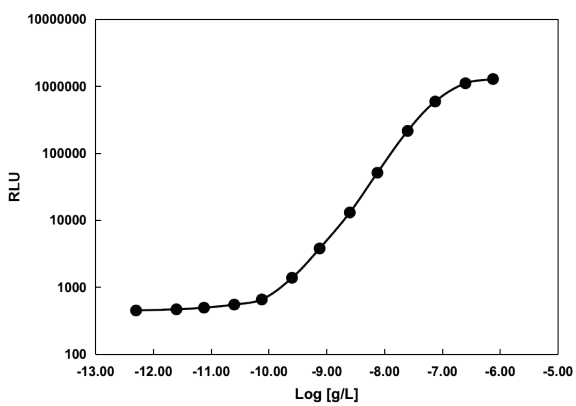


Product Advantages

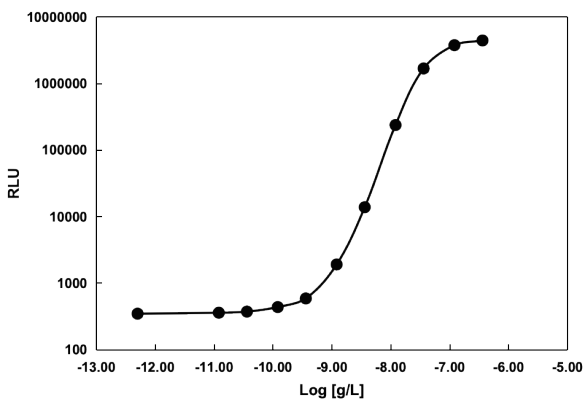
- Excellent Performance: High sensitivity, wide linear range, and reliable results.
- Simple Operation: Requires only an add-and-incubate step, with results available in 1 hour.
- Micro-volume Detection: Requires only 2-10 µL of sample, suitable for the analysis of precious samples.

Performance Demonstration

Monoclonal Antibody Screening Kits
(His-tag antigen,Mouse) Standard Curve



Monoclonal Antibody Screening Kits
(His-tag antigen, Human) Standard Curve

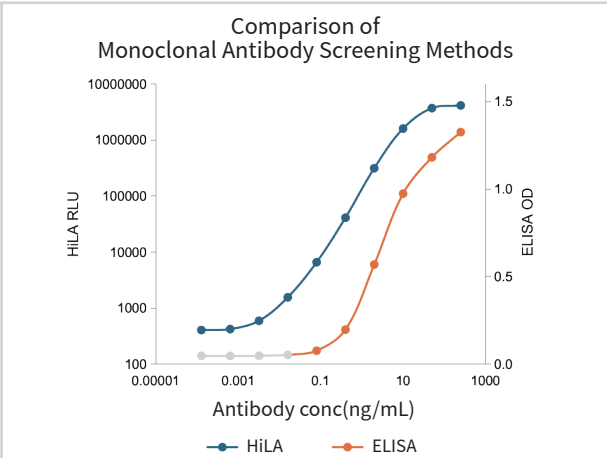


Application Notes

1.Comparison of Monoclonal Antibody Screening Methods

In monoclonal antibody screening, we compared the detection performance of the homogeneous luminescence assay and the ELISA method using the same antibody sample. The experimental results demonstrate that the homogeneous luminescence assay kit significantly outperforms the ELISA method in terms of both detection sensitivity and dynamic range, exhibiting superior overall detection performance.

Antibody conc(ng/mL)	HiLA	ELISA
0	375	0.0484
0.000128	407	0.0477
0.00064	423	0.0466
0.0032	595	0.0480
0.016	1565	0.0532
0.08	6604	0.0768
0.4	41175	0.1971
2	315639	0.5691
10	1608151	0.9743
50	3732631	1.1817
250	415656	1.3259



2. Mouse IgG Screening in Cell Culture Supernatant

In this study, we performed parallel screening of mouse IgG in cell culture supernatants using both the HiLA and the ELISA method. The positive/negative agreement rate between the two methods reached 100%. During the monoclonal antibody screening process with the HiLA, the Mouse Total IgG Detection Kit (SH2505) was first used for quantitative analysis of IgG in the supernatants. Samples were subsequently normalized to the same concentration, effectively eliminating result bias caused by variations in IgG concentration. Compared to ELISA, the HiLA kit utilizes an anti-His antibody for detection, avoiding potential false-positive interference that may arise from anti-tag antibodies, thus offering higher detection reliability. The experimental results demonstrate that the HiLA exhibits excellent detection performance and application value in mAb screening.

Procedure comparison

HiLA Platform \ Screening Cycle 1-2 hours

01 Detect samples using Mouse Monoclonal Antibody Screening Reagent (SHC001).

02 Incubate at 37°C for 60 min.

03 Read signal.

ELISA Platform \ Screening Cycle 1.5 days

01 Coat plate overnight; wash 3 times.

02 Block for 2 h; wash 3 times.

03 Dilute cell culture supernatant; react for 30 min; wash 3 times.

04 Add enzyme-conjugated secondary antibody; incubate for 15 min; wash 3 times.

05 Add substrate for color development (5 min).

06 Add stop solution; read within 10 min.

Screening Result Comparison (S/N)

HiLA	1	2	3	4	5	6
A	4.23	483.51	119.61	288.18	7.68	468.74
B	703.13	210.38	359.81	59.83	219.51	1.01
C	1.03	0.98	0.99	579.61	295.62	
D	67.55	31.38	378.29	5.48	436.45	
E	913.11	367.69	9.11	127.41	1.02	
F	355.65	0.98	1.06	126.48	178.72	
G	1.03	406.61	23.47	1.09	683.49	
H	922.99	10.30	263.12	569.81	6.55	

* S/N>2 is considered positive

ELISA	1	2	3	4	5	6
A	1.61	16.06	15.23	17.30	12.14	16.34
B	17.28	15.99	17.58	14.46	17.00	1.07
C	1.11	1.09	1.06	17.54	16.45	
D	14.61	4.37	17.97	2.34	16.85	
E	17.59	17.99	14.84	17.17	1.14	
F	18.11	1.13	1.03	14.21	16.67	
G	1.23	18.49	15.77	1.19	16.98	
H	16.88	3.13	19.34	17.92	16.17	

* S/N>1.5 is considered positive

*The results demonstrate 100% concordance between HiLA and ELISA in terms of positive/negative classification. HiLA exhibits significantly superior S/N (Signal-to-Noise) ratios compared to ELISA.

3. Advantages of HiLA in mAb Screening

Factors Affecting Affinity Determination:
Variations in antigen conformation, epitope accessibility, experimental conditions, detection mechanisms, and inherent antibody characteristics can all result in differences in binding activity when the same antibody is assessed using different immunoassay methods. Additionally, variations in antibody working concentrations can introduce bias during binding affinity evaluation.

ELISA Method: Limitations of Solid-Phase, Wash-Based Format

- **Binding Assessment Distortion (Wash Step):**
Repeated wash steps following incubation can strip away weakly bound or rapidly dissociating antibody-antigen complexes, leading to underestimation of true binding strength and affinity.

- **Solid-Phase Constraints & Epitope Accessibility Limitations:**
Immobilization of antigens onto solid surfaces may alter their native conformation and mask certain epitopes, compromising antibody recognition and binding.

- **Non-Physiological Environment:**
Solid-phase binding systems cannot authentically replicate the free molecular interactions occurring in biological fluids, potentially yielding binding data that inadequately represents in vivo conditions.

- **Affinity Assessment Bias:**
Collectively, these factors can cause ELISA-derived affinity data to deviate from actual physiological conditions, potentially compromising antibody screening and drug development decisions.

HiLA Method: Advantages of Homogeneous, Wash-Free Format

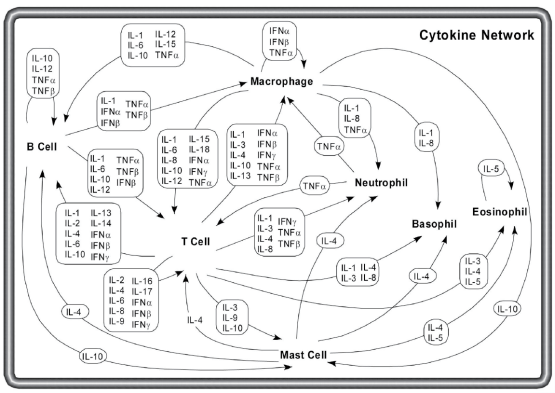
- **High Physiological Relevance:**
Antigen-antibody interactions occur freely in solution, more accurately mimicking molecular interactions in biological fluid environments—delivering results with greater physiological significance.

- **More Authentic Affinity Evaluation:**
Elimination of wash steps prevents loss of weakly bound or transient complexes, enabling more accurate reflection of equilibrium binding strength.

- **Optimal for Therapeutic Antibody Development:**
Results more directly reflect the binding characteristics of therapeutic antibodies (such as monoclonal antibodies) in vivo, providing more reliable data for drug discovery and optimization.

Cytokine Kits

Cytokines are a group of low molecular weight (approximately 6-70 kDa) soluble proteins secreted by various cells such as lymphocytes, macrophages, natural killer (NK) cells, mast cells, and stromal cells.[1] Different cell types can secrete the same cytokine, and a single cytokine can act on various cell types.[2] Cytokines play a crucial role in immune responses and are important mediators of the immune system's communication network. Cytokines are involved in the pathophysiological processes of viral and bacterial infections, as well as various diseases, including cancer, autoimmune diseases, neurodegenerative diseases, and cytokine storms caused by cell therapies, which have gained significant attention recently. As a result, they have become a focus of medical research.



Cytokine Network[2]

VDO has launched several cytokine kits based on HiLA methods. These kits can quantitatively detect cytokine levels in cell culture supernatants or serum and serve as an efficient alternative to traditional methods such as ELISA. They are applicable in various research areas, including basic research, drug immunogenicity evaluation, vaccine development, and more.

Application Scenarios

Basic Research

Supports research in fields such as inflammation response, cancer, autoimmune diseases, etc.

Drug Immunogenicity Evaluation

Used in the early development of antibody drugs, CGT drugs, and small molecule drugs to evaluate cytokine release syndromes and other immune-related adverse reactions.

Vaccine Development

Evaluating the Cellular Immune Bioactivity of Vaccines

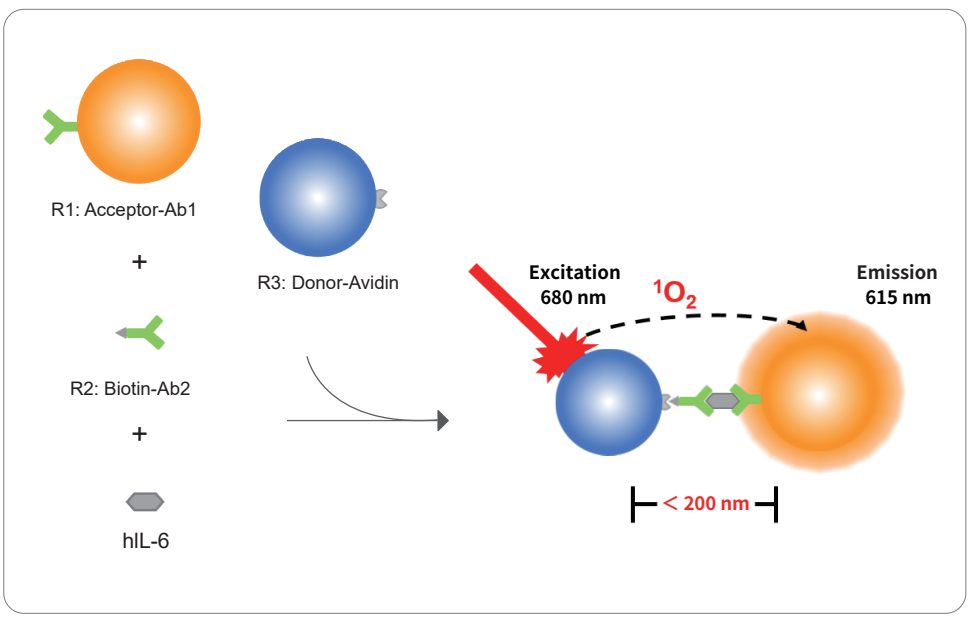
Features

- Homogeneous, no-wash reaction model,convenient and efficient, compatible with automated instruments.
- Wide dynamic range,small sample volume required, suitable for high-throughput rapid testing.
- High sensitivity and strong anti-interference ability, stable performance and excellent reproducibility.
- High sample compatibility,applicable to cell culture supernatants, serum, and other natural samples.

Detection Principle

HiLA is a homogeneous immunoassay method based on energy transfer between acceptor and donor beads. This series of kits uses a dual antibody sandwich homogeneous chemiluminescence method to determine cytokine concentrations.

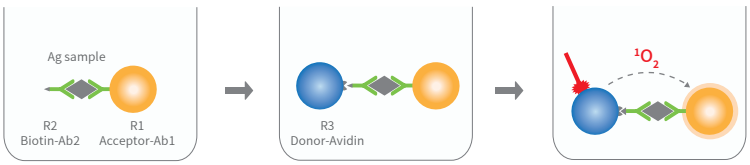
Taking the Human IL-6 (hIL-6) kit as an example: The core components of the kit include acceptor beads-conjugated hIL-6 antibody 1 (R1), biotin-labeled hIL-6 antibody 2 (R2), and streptavidin conjugated to the donor beads (R3). In the detection system, acceptor beads-conjugated antibody 1 and biotin-labeled antibody 2 mix and incubate with the analyte, forming a dual antibody sandwich immune complex. This is then reacted with the donor bead to form a luminescent complex. When the distance between the two beads is less than 200 nm, excitation light causes the donor bead to produce singlet oxygen, which diffuses to the acceptor beads. The acceptor beads receives energy and emits light. The light signal is collected by a photodetector, and the concentration of hIL-6 in the sample is calculated by mathematical fitting. If hIL-6 is not present in the sample, no immune complex will form, and the distance between the beads will be greater than 200 nm, exceeding the transfer distance of singlet oxygen, so the acceptor beadsd will not emit light.



Detection Process

In the detection process, 10 µL of sample and pre-mixed R1 and R2 kits are added and incubated at 37°C for 15 minutes. After adding R3 kit in the dark, the mixture is incubated for an additional 10 minutes before detection. Compared to traditional ELISA kits, this detection process eliminates the need for repeated washing of plates, simplifies operations, and significantly reduces labor and time costs.

HiLA Detection Process:

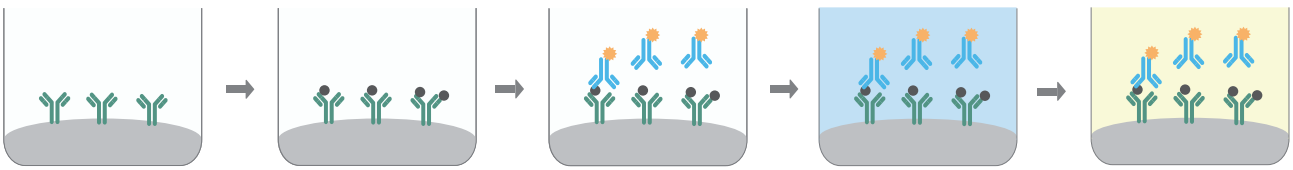


Add 10 µL sample and pre-mixed R1 and R2 kits, incubate at 37°C for 15 minutes.

In the dark, add R3 kit, incubate at 37°C for 10 minutes.

Instrument reading

ELISA Detection Process:



Equilibrate kits to room temperature for 30 minutes.

Add 100 µL sample, Incubate at room temperature for 2 hours,washing plates 3 times.

Add 100 µL detection antibody,Incubate at room temperature for 1 hours,washing plates 3 times.

Add 100 µL substrate, Incubate at room temperature for 20 minutes.

Add 100 µL stop solutionRead absorbance within 10 minutes.

Methodological Comparison

Our HiLA platform delivers robust, high-performance cytokine analysis to accelerate your research. Designed for reliability across diverse matrices—including buffer, cell media, serum, and plasma—it combines exceptional sensitivity, a wide detection range, and outstanding reproducibility with a simplified workflow. Exemplified by our Human TNF-α Kit, It achieves an extended dynamic range up to 100,000 pg/mL, with a broad linear range of 0.39–10,000 pg/mL. This significantly reduces sample dilution steps compared to conventional ELISA or TR-FRET, saving time and speeding up results.

• Ready-to-use: Pre-optimized reagents minimize preparation time and error.

• Stable storage: Shipped and stored at 2–8°C. No freezing required, eliminating performance loss from freeze-thaw cycles.

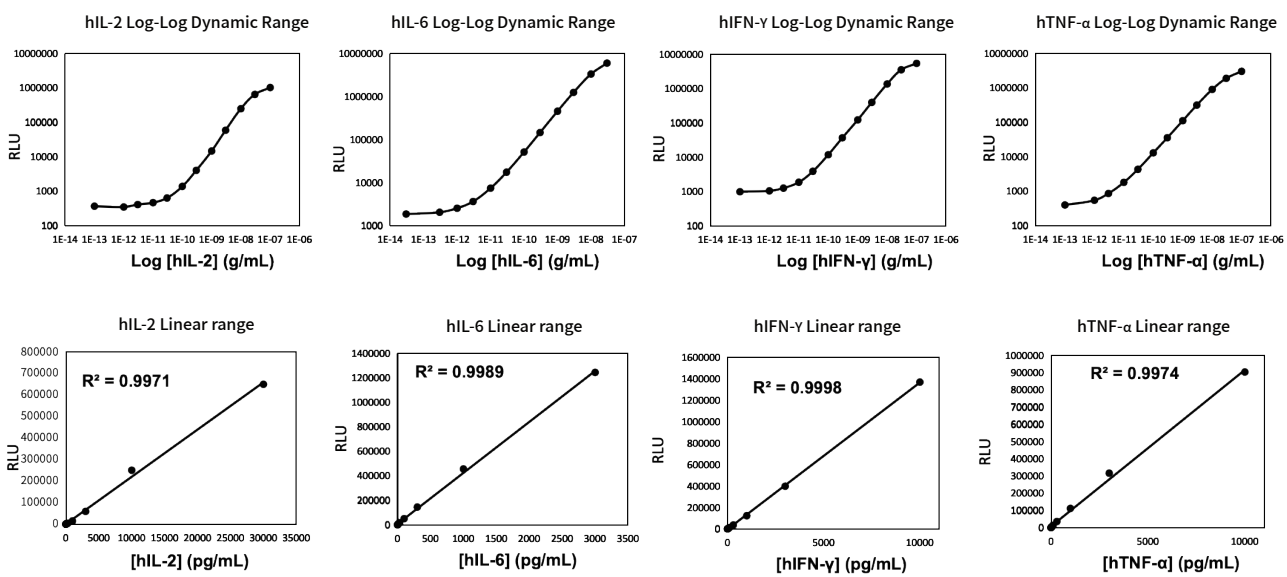
Exemplified by VDO Human TNF-α Kit

Kit Brand	Imported Brand R	Imported Brand R	Imported Brand R	VDO
Detection Method	ELISA	TR-FRET	Homogeneous Luminescence	Homogeneous Luminescence
Upper Dynamic Range	2000 pg/mL	2500 pg/mL	30000 pg/mL	100000 pg/mL
Assay Time	3-4 h	2 h	90 min	25 or 90 min
Sample Consumption	50 µL (96-well)	16 µL (384-well)	2 µL (384-well), 10 µL (96-well)	2 µL (384-well), 10 µL (96-well)
Storage & Shipping	Store at 2-8°C, ship at RT	Store at ⩽ -16°C, ship at ⩽ 0°C	Store & ship at 2-8°C	Store & ship at 2-8°C
Procedure	Reagents must equilibrate to RT before use	Requires working solution preparation before use	Requires working solution preparation before use	Ready-to-use, no dilution required

Performance Demonstration (Partial)

This series of kits offers a wider detection range and can effectively reduce sample dilution steps, saving time.

Species	Cytokine	Dynamic Range (pg/mL)	Linear Range (pg/mL)
Human	IL-2	0-100000	3.26-30000
Human	IL-6	0-30000	0.13-3000
Human	IFN-γ	0-100000	1.07-10000
Human	TNF-α	0-100000	0.39-10000



Performance Parameters Summary

Species	Cytokine	Catalog No.	Blank Limit (pg/mL)	Dynamic Range (pg/mL)	Linear Range (pg/mL)	Precision(coefficient of variation, CV)				Accuracy(recovery,%)				Specificity		
						Repeatability		Intermediate Precision		Buffer	DMEM	Serum	RPMI	Test Substance	Concentr-ation	Cross-reactivity
						Low Sample	High Sample	Low Sample	High Sample							
Human	IL-1β	SH2201	0.32	0-30000	0.32-3000	1.80%	2.00%	2.90%	2.00%	87.70%	92.80%	96.3% (Human Serum)	91.50%	Mouse IL-1β	30ng/mL	0.00%
Human	IL-2	SH2203	3.26	0-100000	3.26-30000	2.90%	2.40%	3.30%	2.40%	88.10%	88.50%	88.3% (Fetal Bovine Serum)	89.70%	Mouse IL2	0.3μg/mL	0.00%
Human	IL-6	SH2204	0.13	0-30000	0.13-3000	3.90%	2.50%	3.80%	4.10%	92.50%	88.80%	88.4% (Fetal Bovine Serum)	87.10%	Human IL-1β	0.05μg/mL	0.00%
Human	IL-8	SH2206	0.44	0-10000	0.44-1000	1.10%	1.10%	2.50%	2.00%	96.80%	98.00%	88.2% (Fetal Bovine Serum)	91.00%	Porcine IL-8	0.03μg/mL	0.01%
Human	IL-10	SH2207	0.91	0-30000	0.91-10000	1.70%	2.40%	3.90%	2.90%	90.70%	108.20%	88.5% (Fetal Bovine Serum)	99.50%	Human IL-2	0.03μg/mL	0.00%
Human	IFN-γ	SH2208	1.07	0-100000	1.07-10000	1.90%	2.50%	2.00%	1.70%	89.60%	95.90%	90.8% (Human Serum)	92.00%	Mouse IFN-γ	0.3μg/mL	0.00%
Human	TNF-α	SH2210	0.39	0-100000	0.39-10000	4.70%	2.50%	4.30%	4.60%	93.00%	106.00%	106.0% (Human Serum)	97.10%	Human IFN-γ	0.1μg/mL	0.00%
Human	IL-17A	SH2213	0.34	0-300000	0.34-30000	3.40%	3.70%	3.10%	3.80%	97.40%	102.40%	88.0% (Human Serum)	93.50%	Mouse IL-17A	0.3μg/mL	0.00%
Human	IL-2R	SH2401	2.95	0-100000	2.95-30000	3.50%	3.10%	10.00%	6.60%	86.60%	85.40%	87.6% (Fetal Bovine Serum)	88.50%	Human IL-2	0.03μg/mL	0.00%
Human	IL-4	SH2402	0.4	0-100000	0.40-10000	1.00%	2.00%	2.20%	2.70%	90.80%	89.40%	85.4% (Human Serum)	92.90%	Mouse IL-4	0.3μg/mL	0.00%
Human	IL-5	SH2403	3.86	0-100000	3.86-10000	3.90%	2.50%	5.90%	3.60%	101.90%	107.40%	96.8% (Human Serum)	99.10%	Mouse IL-5	0.3μg/mL	0.00%
Human	IL-12P70	SH2404	1.99	0-300000	0.88-30000	3.00%	2.90%	4.10%	4.20%	100.50%	101.40%	101.8% (Fetal Bovine Serum)	95.10%	Human IL-2	0.03μg/mL	0.01%
Human	IL-17F	SH2405	3.34	0-300000	3.34-30000	2.70%	2.30%	2.90%	2.40%	99.60%	97.90%	100.8% (Human Serum)	98.90%	Human IL-17A	0.1μg/mL	0.00%
Human	IL-22	SH2406	15.8	0-1000000	15.80-30000	2.20%	2.10%	2.70%	2.60%	104.20%	102.90%	106.4% (Human Serum)	95.80%	Human IL-17A	0.1μg/mL	0.00%
Human	TNF-β	SH2407	0.35	0-100000	0.35-3000	2.80%	2.20%	3.70%	5.70%	90.30%	92.80%	92.8% (Fetal Bovine Serum)	95.80%	Human TNF-α	0.03μg/mL	0.00%
Mouse	IL-6	SH2205	1.26	0-100000	1.26-10000	1.80%	1.50%	2.80%	1.70%	94.20%	87.40%	111.0% (Mouse Serum)	99.80%	Human IL-6	0.1μg/mL	0.00%
Mouse	IFN-γ	SH2209	0.71	0-100000	0.71-10000	3.10%	3.00%	6.00%	5.60%	92.40%	109.70%	110.4% (Mouse Serum)	86.40%	Human IFN-γ	0.3μg/mL	0.00%
Mouse	TNF-α	SH2211	2.5	0-30000	2.50-3000	4.90%	2.10%	5.40%	3.30%	91.30%	103.00%	104.0% (Mouse Serum)	96.00%	Human IFN-γ	0.1μg/mL	0.00%
Mouse	IL-2	SH2408	0.27	0-30000	0.27-3000	1.30%	1.70%	1.90%	2.40%	88.10%	93.10%	95.0% (Mouse Serum)	101.40%	Human IL-2	0.03μg/mL	0.00%

*The table only displays the precision and recovery rate data under the buffer solution matrix. For more information, please refer to the product manual.

HiLA Instrument

The HiLA analyzer is suitable for Homogeneous ImmunoLuminescence Assay , matching with complementary assay reagents and luminescence plates/strips. It can be used for qualitative and quantitative detection of exosomes, proteins, or small molecule substances. The instrument is equipped with a dedicated 680 nm high-energy excitation light source and appropriate temperature control and shaking systems to enhance detection sensitivity and reliability.

Basic Information

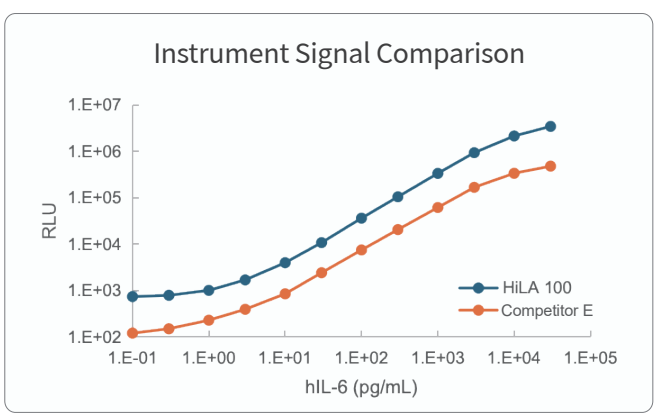
Instrument Name: HiLA Analyzer
Model: HiLA100
Instrument Size: 35 cm (Width) × 39 cm (Depth) × 25 cm (Height)
Instrument Weight: 12.5 kg

Performance Characteristics

- Batch-to-Batch Precision/Repeatability ⩽5%
- Inter-Instrument Variability (Concentration) ⩽10%
- Inter-Day Precision ⩽10%
- Crosstalk: ⩽0.005%
- Signal Detection Range: 0-30,000,000
- Supports Constant Temperature Incubation, Shaking Mode
- Supports 21CFR, Bilingual Interface in Chinese and English
- Supports Customized Detection Procedures
- Supports Calibration Curve & Calculation of Sample Concentration

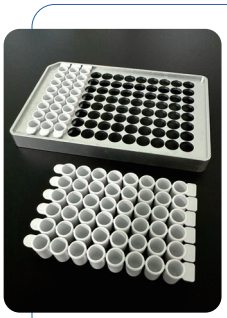
Performance Validation

The HiLA100 system, using the VDO IL-6 detection kit under standardized conditions (identical temperature, reagent volumes, and consumables), exhibited approximately 5-fold greater signal intensity compared to the imported Model E multimode reader—demonstrating a wider dynamic range and exceptional precision.



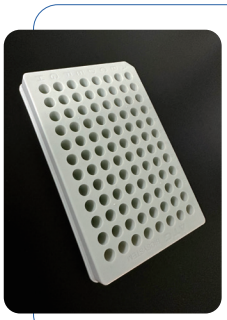
HiLA Consumables

Vdo Biotech provides the following luminescence plates/strips, all verified and suitable for HiLA.



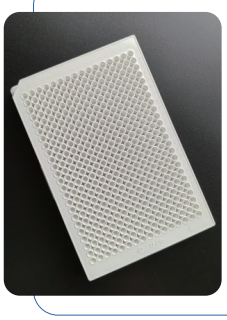
White strip (12×8 wells)

- Used in conjunction with Strip Holder (SHPS01)
- Higher signal values
- Inter-well crosstalk less than 0.005%
- Flexible usage, can load strips according to the number of tests



96-Well Microplate

- Can be used directly
- Higher signal values
- Meets high-throughput demands
- Inter-well crosstalk less than 0.03%

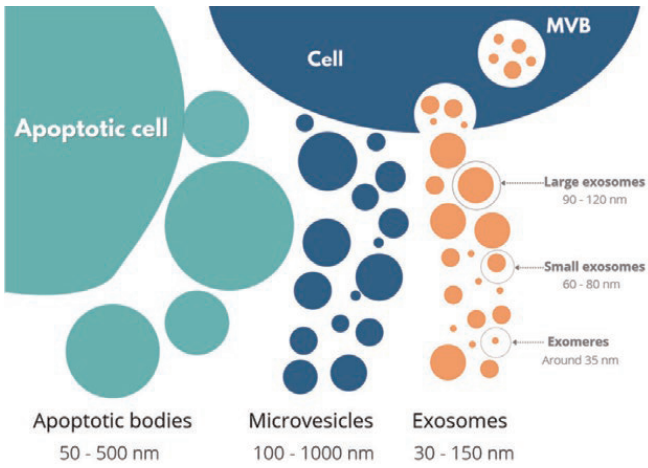


384-Well Shallow Plates

- Reduce reagent and sample consumption by 80%
- Minimize inter-well interference to <0.02%
- Deliver superior signal values
- Maximize cost-efficiency

Exosome Detection

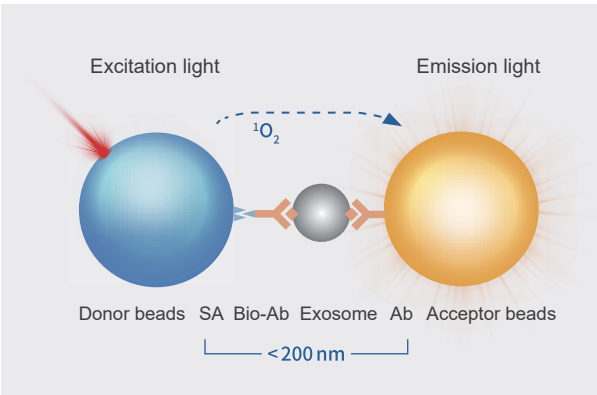
Exosomes are membrane-bound vesicles formed by living cells through a series of regulated processes, including endocytosis, fusion, and exocytosis. They typically range from 30-150 nm in diameter with a density of 1.13-1.21 g/mL. Exosomes naturally exist in body fluids such as blood, saliva, urine, and breast milk, as well as in tissues and intercellular spaces.These vesicles carry bioactive molecules like proteins and nucleic acids, facilitating intercellular communication in various physiological and pathological processes, including tumor microenvironment modulation, immune recognition, and inflammatory responses[3].



Extracellular Vesicles, EVs

For a long time, exosome research and applications have faced significant challenges, including limited detection methods, high equipment costs, lengthy detection cycles, and a lack of standardized controls. These factors have severely hindered the advancement of exosome studies.HiLA with its effective detection distance of <200 nm, is highly compatible with the size characteristics of exosomes (30-150 nm), offering distinct advantages. Unlike traditional ELISA methods, which cannot distinguish exosomes from other vesicles, homogeneous detection enables specific identification of exosomes.Leveraging leading expertise in microsphere and antibody development, VDO introduces an innovative exosome research tool—Exosome Kits(HiLA)—to efficiently advance your exosome research.

Exclusive HiLA Exosome Kits

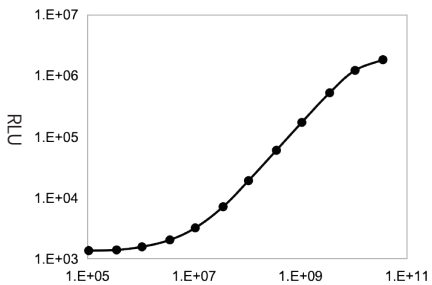


Product Advantages

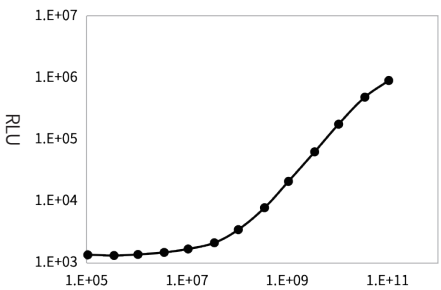
- No coating, washing, or blocking steps
- Obtain results in just 1 hour
- Offers a 4-5 log detection range
- Stable and highly reproducible results
- Analysis of raw, unprocessed samples
- Validated for use with diverse sample types

Performance Demonstration

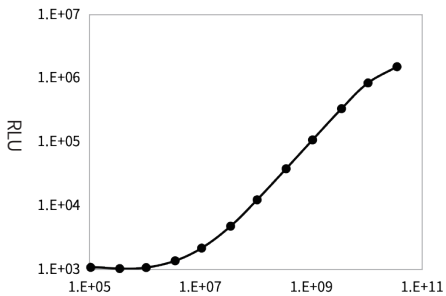
CD9/CD9-based quantification of MSC exosome standards



CD63/CD63-based quantification of MSC exosome standards



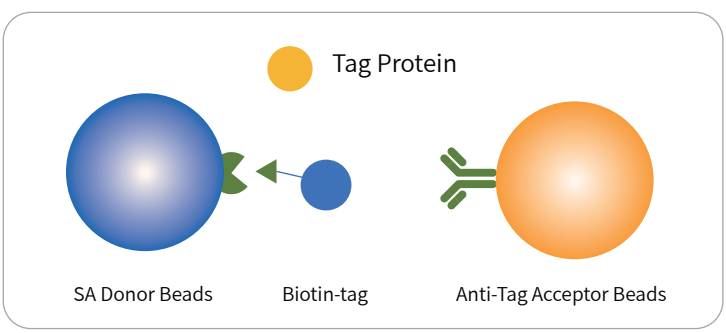
CD81/CD81-based quantification of MSC exosome standards



Protein Detection & Research

Tag Check Kits

VDO Biotech will successively launch a series of tag protein (His/GST/FLAG tag) detection kits for: precise quantification of tagged proteins, dynamic monitoring of tag accessibility, and elimination of false positives in high-throughput screening caused by compound-tag interactions.



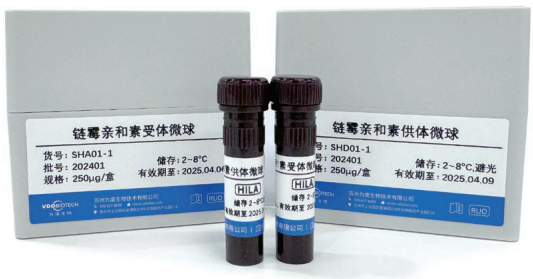
His-tag protein kit

Product Advantages

- Rapid Detection: Results in 30 minutes. Supports rapid quantitative detection of His-tagged proteins at various stages of production and purification.
- Precise & Reliable: Detection range covers 0–1 mg/mL with accurate quantification. Compatible with standard workflows and capable of eliminating false positives.
- Purification Assessment: Can be used to evaluate and predict the feasibility of nickel column purification.

HiLA Toolbox

HiLA technology represents the ideal foundation for establishing universal research platforms. VDO Biotech has developed a comprehensive portfolio of research tools that significantly streamline platform establishment, delivering efficient and reliable solutions for drug screening, protein-protein interaction studies, and diverse scientific applications.



Application Notes: Purification-Free Paired Antibody Screening

HiLA for paired antibody screening enables precise identification of high-affinity, high-specificity antibody pairs, establishing a robust foundation for downstream immunoassay development. This approach eliminates purification process and washing steps required in traditional ELISA, significantly enhancing screening efficiency.

Advantages of HiLA Paired Antibody Screening

- **Purification-Free & Label-Free:** Directly screen raw culture supernatant—no antibody purification, plate coating, or labeling required—to rapidly identify optimal pairs.
- **Wash-Free, Streamlined Workflow:** Simply add sample and incubate. Eliminating all wash steps enhances data reliability, reproducibility.
- **Results in 1 Hour:** Complete the entire screening workflow in as little as one hour, accelerating discovery timelines.

Workflow for Paired Antibody Screening(HiLA)

01 Supernatant Screening Detect IgG concentration and titer in culture supernatant (Mouse Total IgG Detection Kit, SH2505; Mouse Monoclonal Antibody Screening Kit, SHC001)

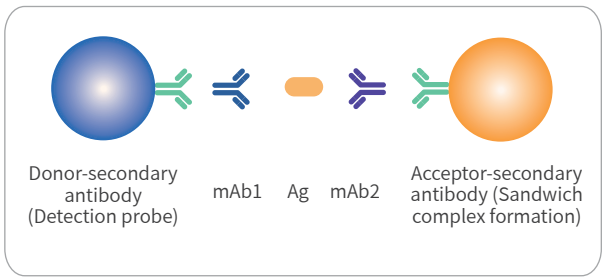
02 Sample Preparation Eliminate non-reactive monoclonal antibodies; dilute remaining positive mAbs and prepare antigen serial dilutions

03 Orthogonal Pairing Test Perform monoclonal antibody orthogonal pairing test

04 Pair Selection Sorted by signal separation

→ Principle →

- Paired Antibody Screening (Cell Culture Supernatant)



Custom Services

VDO Biotech leverages extensive expertise and resources to deliver efficient, tailored solutions. Our custom development services include:

- Acceptor Bead Labeling
- Biotinylation
- Assay Condition Optimization
- Analytical Method Development

Service Workflow

01	02	03	04	05	06
Consultation	**Feasibility**	**Proposal**	**Execution**	**Reporting**	**Delivery**
Requirements discussion	Technical assessment	Project protocol design	Implementation & validation	Data analysis & documentation	Final technology transfer

References:

[1] Liu C, Chu D, Kalantar-Zadeh K, George J, Young HA, Liu G. Cytokines: From Clinical Significance to Quantification.Adv Sci (Weinh). 2021;8(15):e2004433.

[2] Zhang JM, An J. Cytokines, inflammation, and pain. Int Anesthesiol Clin. 2007;45(2):27-37.

[3] Alzhrani, Ghadi N et al. Exosomes: Isolation, characterization, and biomedical applications. Cell biologyinternational vol. 45,9 (2021): 1807-1831.

Ordering Information

IgG Kits		
Product Name	Catalog Number	Package
Human IgG Kit [broad range] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2218	100T/Kit
Human IgG1 Kit [broad range] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2501	100T/Kit
Mouse IgG kit [broad range] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2505	100T/Kit
Mouse IgG1 kit [broad range] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2506	100T/Kit
Mouse IgG2a kit [broad range] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2507	100T/Kit
Mouse IgG2b kit [broad range] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2508	100T/Kit
IgG Kit [Multispecies] (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2219	1000T/Kit

Monoclonal Antibody Screening Kits		
Product Name	Catalog Number	Package
Mouse monoclonal antibody screening kit (His-tag antigen)	SHC001	1000T/Kit
Mouse monoclonal antibody screening kit (GST-tag antigen)	SHC011	1000T/Kit
Human monoclonal antibody screening kit (His-tag antigen)	SHC002	1000T/Kit
Human monoclonal antibody screening kit (GST-tag antigen)	SHC012	1000T/Kit

Cytokine Kits			
	Product Name	Catalog Number	Package
Human	Human Interleukin-1β (hIL-1β) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2201	100T/Kit
	Human Interleukin-2 (hIL-2) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2203	100T/Kit
	Human Interleukin-6 (hIL-6) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2204	100T/Kit
	Human Interleukin-8 (hIL-8) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2206	100T/Kit
	Human Interleukin-10 (hIL-10) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2207	100T/Kit
	Human Interferon-γ (hIFN-γ) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2208	100T/Kit
	Human Tumor Necrosis Factor-α (hTNF-α)Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2210	100T/Kit
	Human Interleukin-17A (hIL-17A) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2213	100T/Kit
	Human Interleukin-2 Receptor (hIL-2R) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2401	100T/Kit
	Human Interleukin-4 (hIL-4) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2402	100T/Kit
	Human Interleukin-5 (hIL-5) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2403	100T/Kit
	Human Interleukin-12p70 (hIL-12p70) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2404	100T/Kit
	Human Interleukin-17F (hIL-17F) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2405	100T/Kit
	Human Interleukin-22 (hIL-22) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2406	100T/Kit
	Human Tumor Necrosis Factor-β (hTNF-β) kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2407	100T/Kit
Mouse	Mouse Interleukin-6 (mIL-6) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2205	100T/Kit
	Mouse Interferon-γ (mIFN-γ) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2209	100T/Kit
	Mouse Tumor Necrosis Factor-α (mTNF-α)Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2211	100T/Kit
	Mouse Interleukin-2 (mIL-2) Kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SH2408	100T/Kit

Tag Check Kits		
Product Name	Catalog Number	Package
His-tag protein kit	SHC003	Customized
GST-tag protein kit	SHC013	Customized

Antibody Pair Screening Kits		
Product Name	Catalog Number	Package
Mouse Antibody Pair Screening Kit	SHC005	Customized

Exosome Kits		
Product Name	Catalog Number	Package
Human (CD9/CD9) Exosome kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SHE2201	100T/Kit
Human (CD63/CD63) Exosome kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SHE2202	100T/Kit
Human (CD81/CD81) Exosome kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SHE2203	100T/Kit
Human (CD9/CD81) Exosome kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SHE2204	100T/Kit
Human (CD63/CD9) Exosome kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SHE2205	100T/Kit
Human (CD63/CD81) Exosome kit (Homogeneous ImmunoLuminescence Assay, HiLA)	SHE2206	100T/Kit

Instruments, Consumables, and Services		
Product Name	Catalog Number	Package
HiLA Analyzer	SHI100	HiLA 100
HiLA Analyzer Quality Control Kit	SHQ001	15 run/kit
White strip in shelf (12×8 wells)	SHP0802	10 Plates/Bag
White strip (12×8 wells)	SHP0801	12 Strips/Bag
96-Well Microplate	SHP9601	10 Plates/Bag
384-Shallow Well Microplate	SHP3841	10 Plates/Bag
Strip Holder	SHPS01	1 Piece
Green Light	SHL01	1 Piece/Box
Acceptor Beads Labeling Service	SHS01	-
Small Molecular Protein Labeling Service	SHS02	-
Detection Condition Optimization Service	SHS03	-

HiLA Toolbox		
Product Name	Catalog Number	Package
Streptavidin Acceptor Beads	SHA01	250μg, 5mg, 25mg
Protein A Acceptor Beads	SHA02	250μg, 5mg, 25mg
Protein G Acceptor Beads	SHA03	250μg, 5mg, 25mg
Nickel Chelate Acceptor Beads	SHA04	250μg, 5mg, 25mg
Anti-Mouse IgG Acceptor Beads	SHA05	250μg, 5mg, 25mg
Anti-Rabbit IgG Acceptor Beads	SHA06	250μg, 5mg, 25mg
Anti-Human IgG Acceptor Beads	SHA07	250μg, 5mg, 25mg
Anti-Human IgG Fc Acceptor Beads	SHA08	250μg, 5mg, 25mg
Protein L Acceptor Beads	SHA09	250μg, 5mg, 25mg
Human IgG Acceptor Beads	SHA10	250μg, 5mg, 25mg
Anti-His Tag Acceptor Beads	SHA11	250μg, 5mg, 25mg
Anti-FITC Acceptor Beads	SHA12	250μg, 5mg, 25mg
Anti-GST Tag Acceptor Beads	SHA13	250μg, 5mg, 25mg
Anti-Flag Tag Acceptor Beads	SHA14	250μg, 5mg, 25mg
Streptavidin Donor Beads	SHD01	250μg, 5mg, 25mg
Protein A Donor Beads	SHD02	250μg, 5mg, 25mg
Protein G Donor Beads	SHD03	250μg, 5mg, 25mg
Anti-Mouse IgG Donor Beads	SHD04	250μg, 5mg, 25mg
Anti-Rabbit IgG Donor Beads	SHD05	250μg, 5mg, 25mg
Anti-Human IgG Donor Beads	SHD06	250μg, 5mg, 25mg
Anti-Human IgG Fc Donor Beads	SHD07	250μg, 5mg, 25mg
Protein L Donor Beads	SHD08	250μg, 5mg, 25mg
Human IgG Donor Beads	SHD09	250μg, 5mg, 25mg

Buffers			
Product Name	Catalog Number	Package	Description
Universal Buffer 1	SHB04	10mL,100mL,Customized	Diluent for toolbox verification test
Universal Buffer 3	SHB06	10mL,100mL,Customized	Diluent for SHA04 Nickel Chelate Acceptor Beads
Universal Buffer 4	SHB07	10mL,100mL,Customized	HiLA universal buffer, suitable for most applications

Vdo Biotech Co.,Ltd.

Tel：0512-80905220/400 627 8688 Email : vdo@vdobiotech.com Web : www.vdobiotech.com Fax : 0512-80905230
Add : Building C18, 218 Xinghu St, Suzhou Industrial Park, China