

# Where Proteins and Innovation Advance Biomedicine

Target  
Identification



Drug  
Candidate  
Development



In Vitro  
Tests



Drug  
Evaluation



Optimization  
and CMC  
Development



PK/PD/Tox



In Vivo Proof  
of Concept



Clinical Trial



Commercial  
Production



# Product Catalogue

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# About ACROBiosystems



# BIOSYSTEMS Acro

ACROBiosystems is a global leading manufacturer of recombinant proteins and other critical reagents to advance and accelerate the development of target therapeutics, vaccines, and diagnostics. The company is listed on the Shenzhen Stock Exchange and enjoys long-term partnerships with the world's Top 20 pharmaceutical companies.

The company employs an application-oriented development strategy, with a particular focus on product design, quality control and solution-based support. The firm's products and services enable anyone in the field of drug development to have a more intuitive and streamlined process. The company is determined to become a cornerstone enterprise in the field of biomedical and health industry.

## Our Clients



Pharma



Biotech



Diagnostics



Vaccine



CXO



Academia



> 6,000 Customers

> 70 Countries

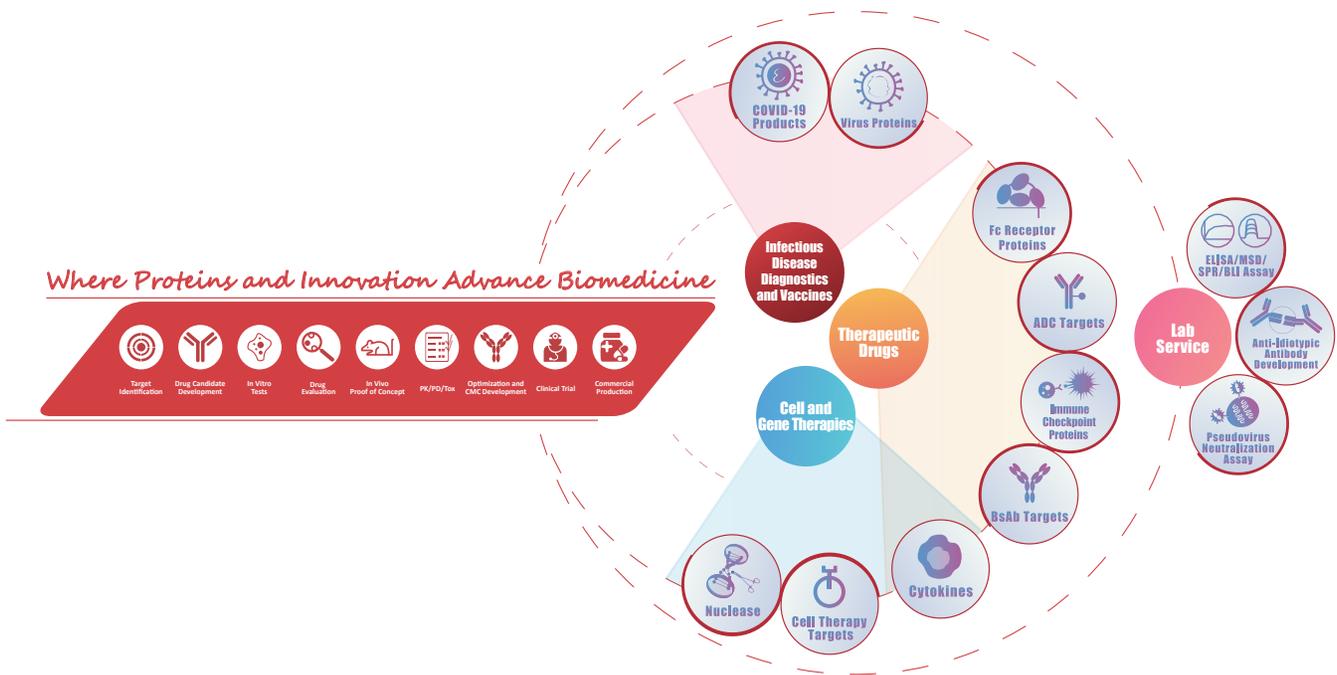
> 100,000 Scientists

## Global Top Pharmaceuticals


## ► Global Renowned Institutions



## ■ What ACROBiosystems Can Do for You?



- Antigens**
- Antibodies**
- Kits**
- Beads**
- Enzymes**
- Cell Lines**
- Pseudovirus**
- Lab Service**

Scan the QR code to check our product list!

★ Based on the advanced technology in recombinant proteins, ACROBiosystems developed a comprehensive categories of products and services with innovation.

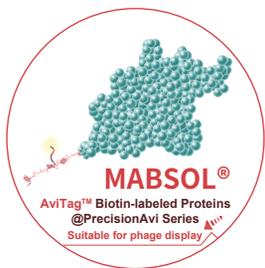
## ■ Why Choose ACROBiosystems?

### ► Better Design:

Application-oriented strategies are employed

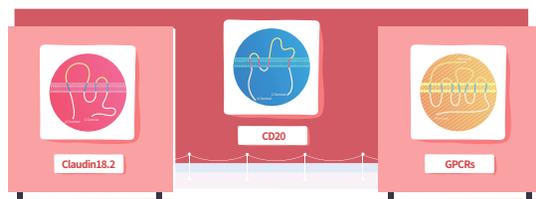
### ★ Multiple advanced platforms are equipped to ensure the natural conformation of the proteins:

- 95% of the proteins are produced by HEK293 cells and make sure the proper protein folding.
- **Avi™** Tag technology is used for biotin-labelled proteins and leads to high detect sensitivity.
- **FLAG™** technology platforms for full length multi-pass transmembrane proteins to address the structural complexity of multi-pass TPs and meet the needs of different application.
- **Star Staining™** technology platforms for fluorescent-labelled products, using new-generation site-specific labelling technology to maintain natural bioactivity.



## Full Length Active Gallery

Multi-pass Transmembrane Proteins and Technology Platforms



### ► Better Quality:

Strict quality control systems are enforced

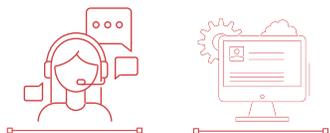
- SEC-MALS for validating purity and correct agglomerated structure in addition to HPLC and SDS-PAGE.
- ELISA/SPR/BLI/cell-based assay for validating bioactivity.
- Ensured batch to batch consistency.
- DMF available for some products.
- ISO9001 and ISO13485 certified.



### ► Better Support:

Technical support and resources are offered

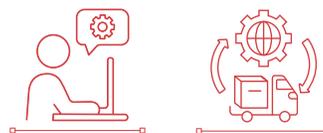
- 24 hours technical support from professional team.
- Protocols of bioactivity validation available.
- Scientific eBooks and posters available.



### ► Better Response:

Customers first

- Same day rush order is available for US and China.
- 3-5 business days for world-wide delivery.
- Online chat is at your service.

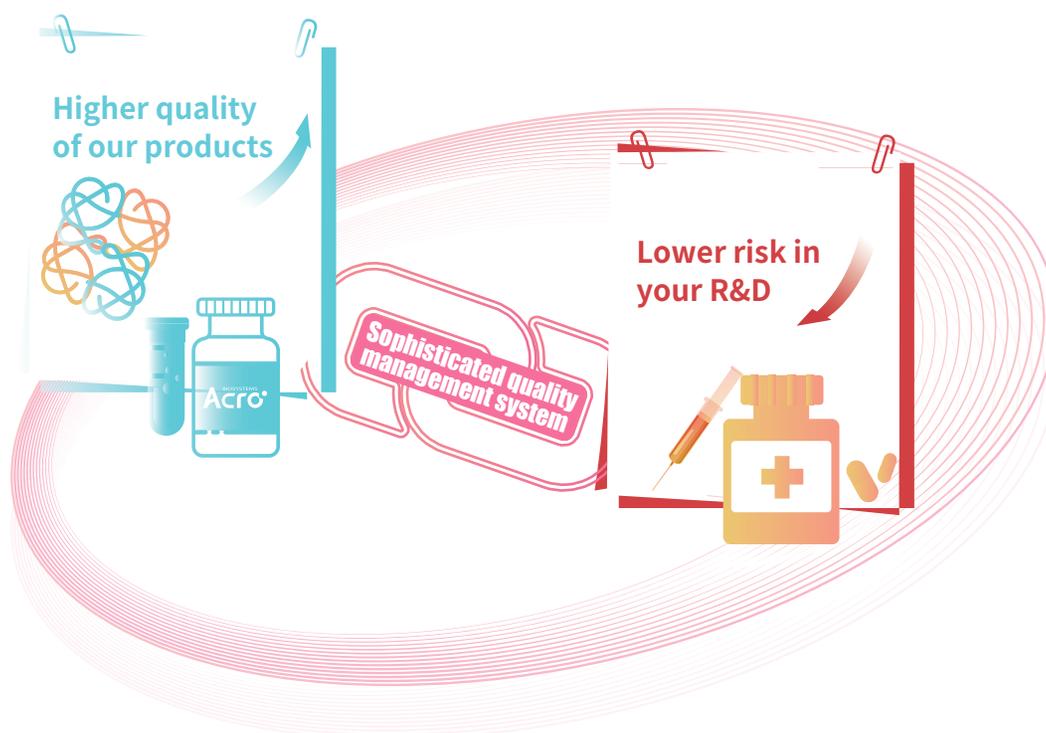


# Our Quality Systems

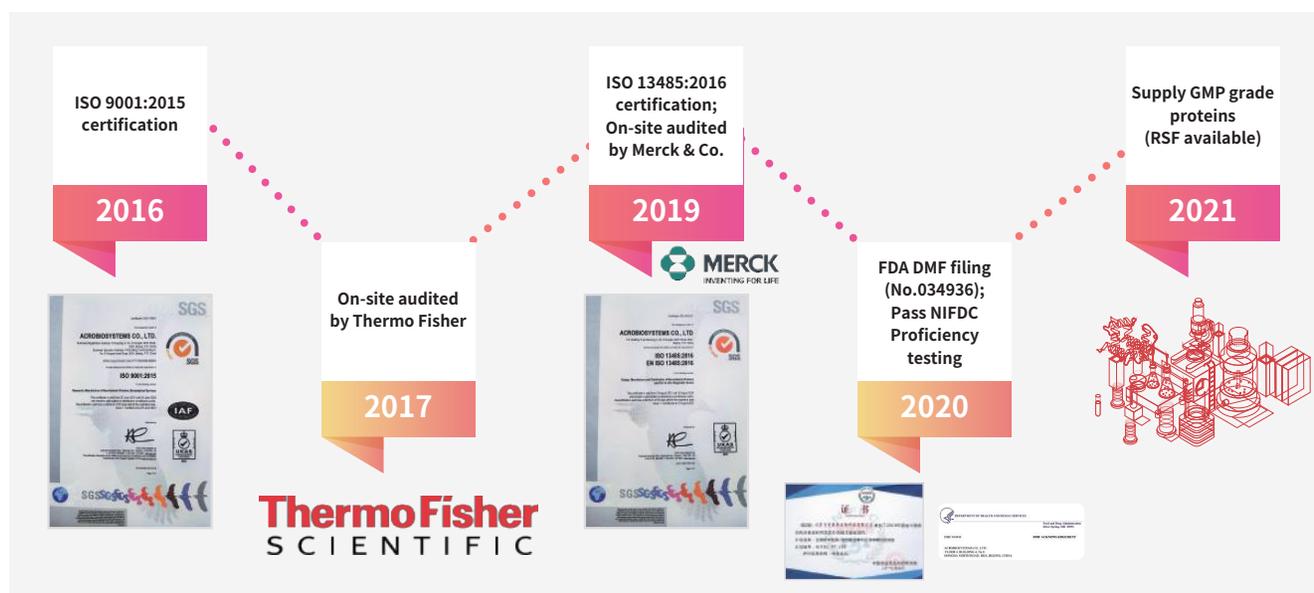


BIOSYSTEMS  
**Acro**

As a leading manufacturer of recombinant proteins and other critical reagents to support the development of biomedicine, ACROBiosystems employs an application-oriented development strategy, with a particular focus on product design, quality control to support every step in your journey of drug development.



## ■ Better QMS for Faster Medicine R&D and Commercial Process



## ■ Be Your Premier Partner with Innovation and Inspiration

### ► Key Points of Recombinant Protein Reagent for Your Drug Development:

#### ★ Purity and homogeneity

- SDS-PAGE
- SEC-MALS, HPLC, DLS, EM, etc.

#### ★ Close to native conformation

- Post-translational modification and proper protein folding; native aggregation state
- Correctly paired disulfide bonds

#### ★ Bioactivity verified by fit-to-purpose assays

- ELISA, HTRF, SPR/BLI
- Enzyme activity, FACS, Cell based activity

#### ★ Batch-to-batch consistency

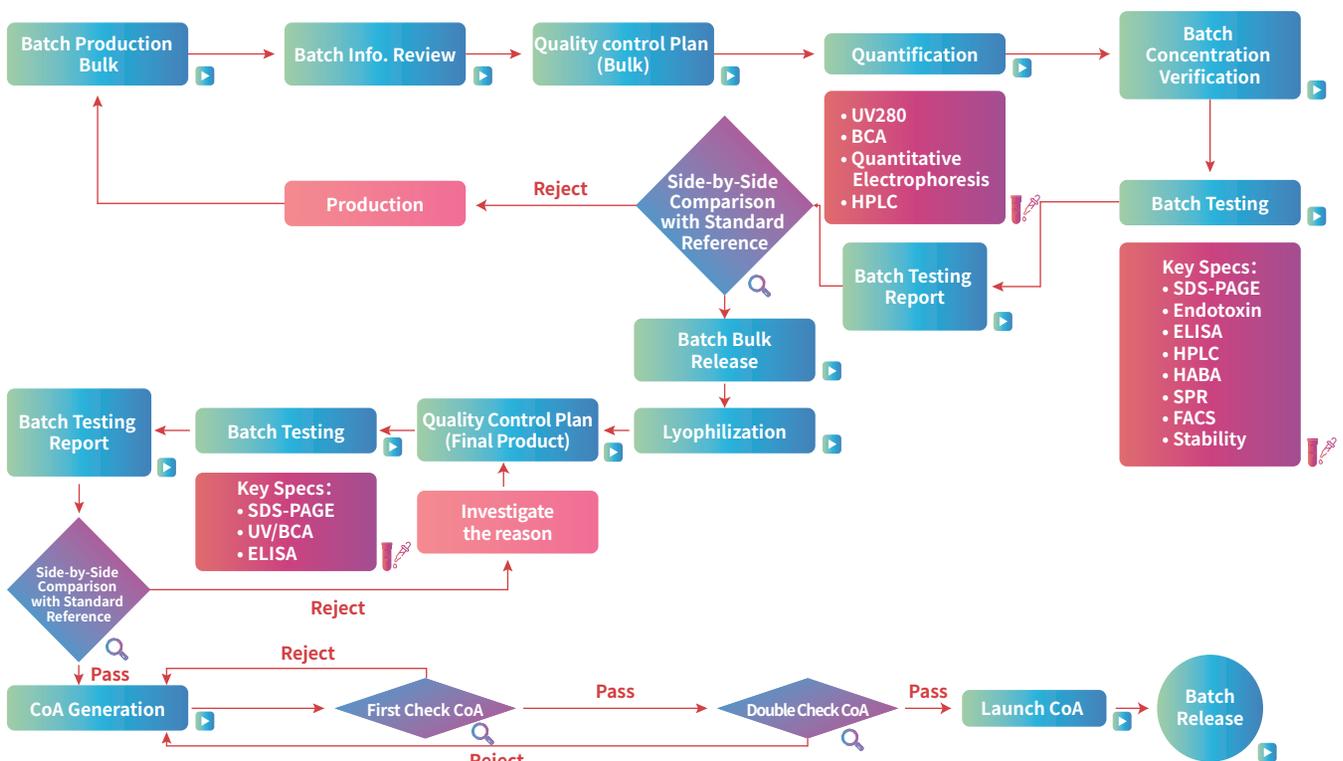
- Manufacture technique control
- Product quality control
- Quality management systems

#### ★ Manufacture and product development capability

- Long term supply and stable quality
- Fast response and mass production capability
- New products research and develop ability

### ► Strict Quality Control Process Makes ACRO a Critical Reagent Bank

► 15 testing steps    🔍 10 methods of analysis    🔍 4 audits

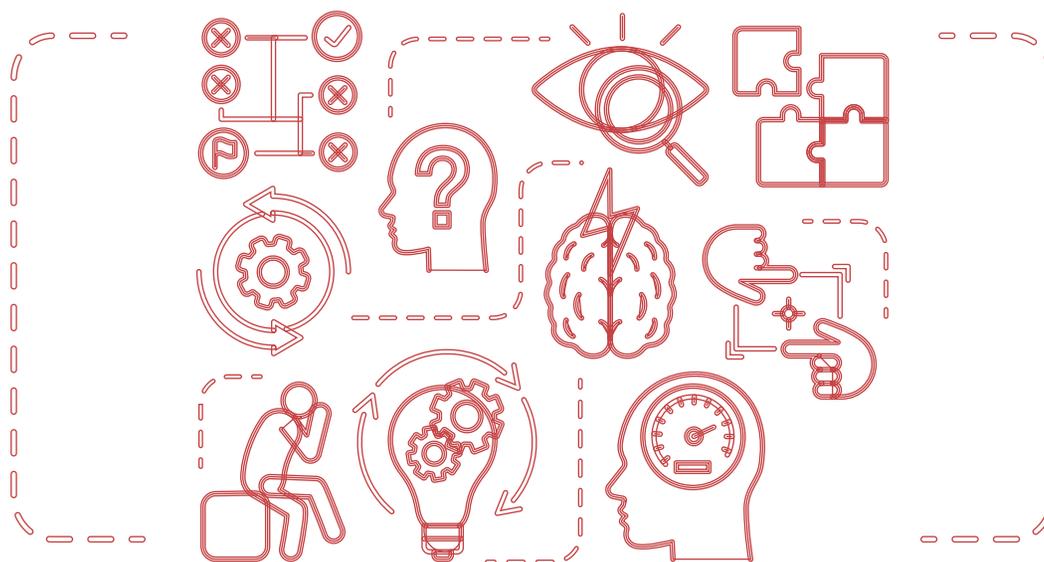


# Our Solutions for Biopharma Industry



BIOSYSTEMS  
**Acro**

<b>Featured Products</b>	Full-length Transmembrane Proteins( <b>P07</b> )	Biotinylated Proteins( <b>P09</b> )	<i>Star Staining</i> –New Generation Tools for CAR Detection( <b>P11</b> )
<b>Discovery Solutions for Cell and Gene Therapy</b>	GMP Grade Cytokines ( <b>P14</b> )	CAR-T Target Proteins ( <b>P15</b> )	Anti-FMC63 Antibodies ( <b>P17</b> )
	Other Recommended Products for CGT( <b>P19</b> )		
<b>Solutions for Therapeutic Antibodies</b>	Bispecific Antibody Target Proteins( <b>P20</b> )	ADCs Development Solutions( <b>P22</b> )	Immune Checkpoint Proteins( <b>P24</b> )
	Fc Receptor Proteins ( <b>P26</b> )	Cytokines( <b>P27</b> )	Reporter Cell Lines( <b>P29</b> )
	Other Recommended Products for Therapeutic Antibodies( <b>P31</b> )		
<b>Solutions for Infectious Diseases Research</b>	COVID-19 Related Products( <b>P32</b> )	Other Virus Antigens ( <b>P35</b> )	
	Proteins for Neuroscience		
<b>Innovation Lab Service</b>	Aneuro: Advance Neuroscience( <b>P36</b> )		
	ELISA/MSD/SPR/BLI Analytical Service, Anti-Idiotype Antibody Development Service, Pseudovirus Neutralization Assay Service( <b>P37</b> )		



# Featured Products



## ■ Full-length Multi-pass Transmembrane Proteins

ACROBiosystems is focused on overcoming the challenges during the preparation of multi-pass transmembrane proteins (TPs). We provide full-length membrane proteins via "FLAG" technology platforms to assist our customers and collaborators with antibody drug development and therapeutic strategies.

ACRO has developed a gallery of full-length multi-pass TPs with stabilised structure and high activity including CD20, Claudin 18.2, Claudin 6, CD133, GPRC5D, CXCR4, CCR5 and CCR8 to facilitate the drug development and mechanism studies.

### Full Length Active Gallery

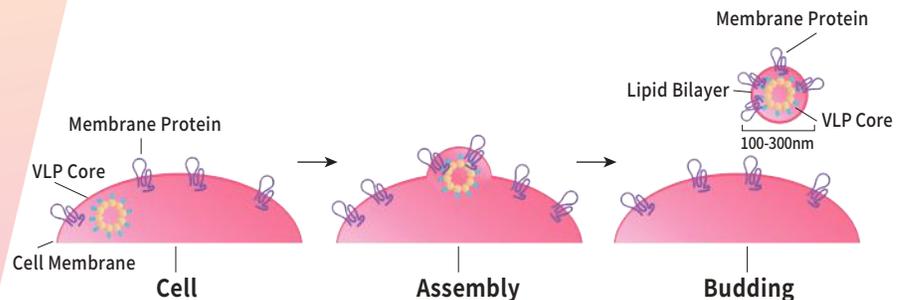
Multi-pass Transmembrane Proteins and Technology Platforms



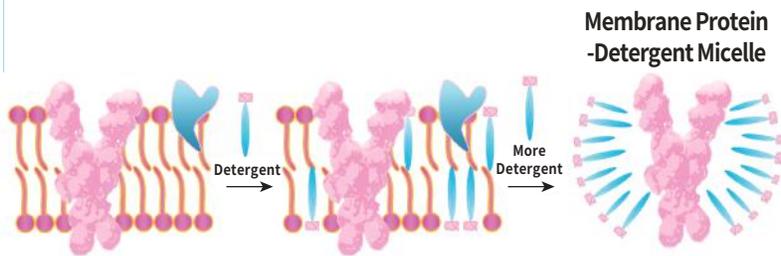
#### ► Product Features

- ★ Comprehensive Solutions: VLP platform, Detergent Micelle platform, Nanodisc platform.
- ★ Wide range of applications: immunisation, ELISA, SPR, BLI, cell experiment, CAR detection, etc.
- ★ Extensive product catalogue: CD20, Claudin 18.2, Claudin 6, CD133, GPCRs (GPRC5D, CXCR4, CCR5, CCR8), etc.

### VLP Platform



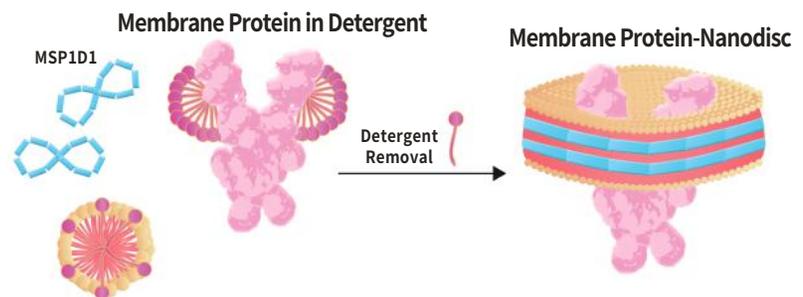
- ★ Full-length transmembrane proteins with native conformation.
- ★ Higher abundance and higher immunogenicity. Optimal target presentation to APC and phage display because of their 100-300nm in size.
- ★ Suitable for immunisation/ELISA/SPR/BLI/cell experiment/CAR detection.



## Detergent Micelle Platform

- ★ Full-length multi-pass transmembrane proteins contain complete conformation.
- ★ Can be accurately quantified.
- ★ High solubility in presence of DDM/CHS (Cat. No. [DC-11](#)).
- ★ Suitable for immunisation/ELISA/SPR/BLI.

## Nanodisc Platform



- ★ Full-length multi-pass transmembrane proteins in a natural membrane environment retaining high biological activity.
- ★ High hydrophilicity without detergents.
- ★ Authorized licensed patent holder.
- ★ Suitable for immunisation/ELISA/SPR/BLI/cell experiment/CAR detection.

### ► Assay Data

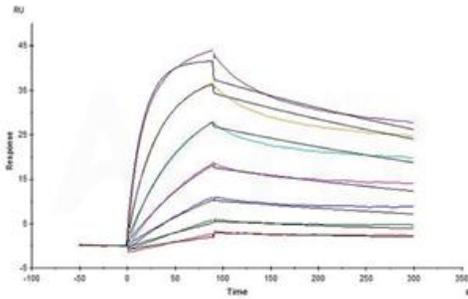
#### >>> Claudin18.2-VLP

Full-length Claudin18.2-VLP (Cat. No. [CL2-H52P7](#)) has been observed under an electron microscope to ensure that it is assembled correctly.



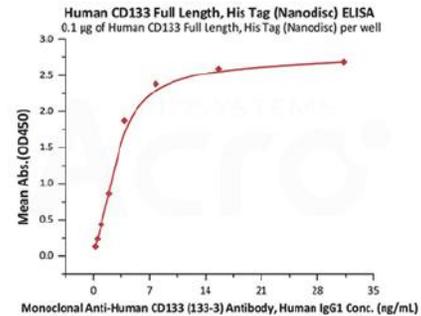
## >>> CD20-DDM/CHS

After SPR affinity verification, biotin-labelled full-length CD20-DDM/CHS (Cat. No. [CD0-H82E5](#)) can specifically bind to Rituximab with an affinity constant of 1.73 nM.



Biotinylated Human CD20, His, Avitag (HEK293) (Cat. No. [CD0-H82E5](#)) captured on Biotin CAP-Series S Sensor Chip can bind Rituximab with an affinity constant of 1.73 nM as determined in a SPR assay (in presence of DDM and CHS) (Biacore T200).

It has been verified by ELISA that full-length CD133-Nanodisc (Cat. No. [CD3-H52H1](#)) can specifically bind to anti-human CD133(133-3) monoclonal antibody, with a linear range of 0.2-4 ng/mL.



Immobilised Human CD133 Full Length, His Tag (Nanodisc) (Cat. No. [CD3-H52H1](#)) at 1 µg/mL (100 µL/well) can bind Monoclonal Anti-Human CD133 (133-3) Antibody, Human IgG1 with a linear range of 0.2-4 ng/mL (QC tested).

## ► Product List

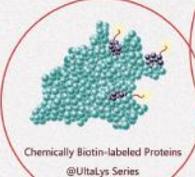
VLP Platform							
Claudin18.2	Claudin-6	GPRC5D	CCR5	CCR8	CD20	CXCR4	VLP
Detergent Micelle Platform							
CD20	Claudin18.2	CCR5	GPRC5D	CD133	Buffer		
Nanodisc Platform							
CD20		CD133		GPRC5D		MSP1D1	

## ■ Biotinylated Proteins

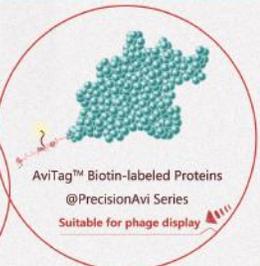
**BIOSYSTEMS Acro** • Closest to Natural Conformation and Modification • High Bioactivity & Detection Sensitivity • High Batch-to-Batch Consistency

### MABSOL® Biotinylated Proteins

**Bring pre-labeled biotinylated proteins directly to your bench**



Chemically Biotin-labeled Proteins  
@UltraLys Series



AviTag™ Biotin-labeled Proteins  
@PrecisionAvi Series  
Suitable for phage display

To simplify the experimental operation and better meet the application needs of customers, ACROBiosystems has designed and developed a comprehensive collection of biotin-labelled proteins, including two unique complementary product series, which are based on the PrecisionAvi single-point labelling series Avitag™ technology, and the UltraLys series using in-house developed chemical labelling methods. These products are widely used in experiments such as Biopanning, AlphaLISA, SPR, FACS, ELISA, Immunocapture and Enrichment.

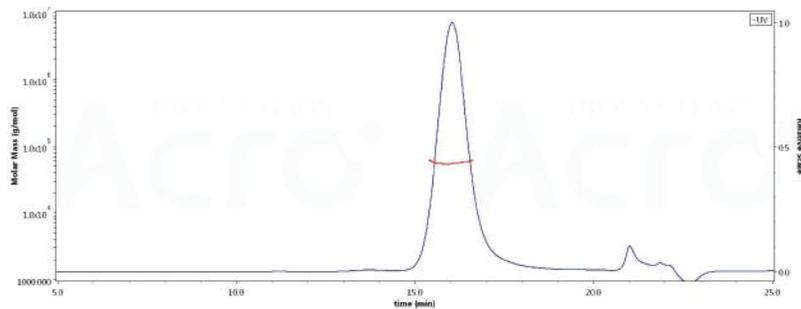
## ► Product Features

- ★ Closed to natural confirmation and modification with high bioactivity.
- ★ High detection sensitivity and batch-to-batch consistency.
- ★ AviTag™ single-point enzymatic labelling technique: precise and controllable labelling sites; uniform labelling.
- ★ UltraLys series: high detection sensitivity; simple labelling method.

## ► Assay Data

### >>> High purity verified by MALS

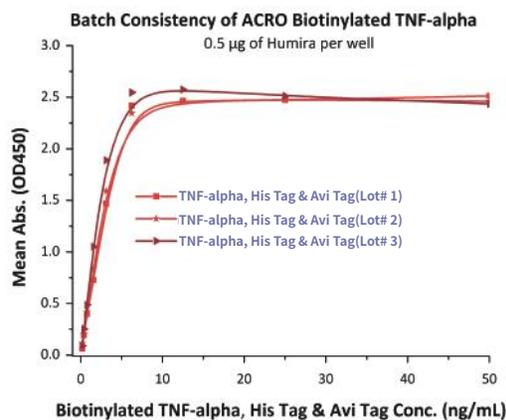
Biotinylated proteins start from the structure of the protein itself, and the focus is to ensure the purity of the product and the conformation of the polymer. The natural conformation of different molecules can be monomeric, dimerised, trimeric or even multimeric. It is necessary to measure the purity and aggregate form of the protein in the production process of the protein. we use the MALS technology to analyse the purity and molecular weight of the protein.



SEC-MALS verifies that the purity of biotin-labelled Human TNF-alpha (Cat. No. [TNA-H8211](#)) is >95%, and the molecular weight of the protein is 48-65 kDa (monomer is 18kDa), so it is a trimer form, consistent with the natural state.

### >>> Consistent activity before and after labelling

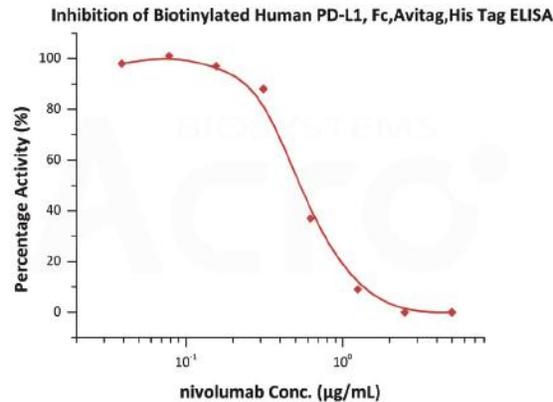
Batch-to-batch consistency of our biotinylated products are ensured based on strict quality control.



In the above ELISA experiments, three different batches of biotin-labelled human TNF-alpha (Cat. No. [TNA-H82E3](#)) were tested for binding to Adalimumab, and the results showed that the batch-to-batch variability of the tested samples was small.

### >>> High bioactivity and detection sensitivity

Our biotinylated proteins have high bioactivity and excellent detection sensitivity in different applications, especially for Biopanning, AlphaLISA, SPR, FACS and ELISA assays.



FACS analysis shows that the binding of Biotinylated Human PD-L1, Fc, Avitag, His Tag (Cat. No. [PD1-H82F3](#)) to 293 overexpressing PD-1 was inhibited by increasing the concentration of neutralising anti-PD-1 antibody. The concentration of PD-L1 used is 2 µg/mL. The IC50 is 0.64 µg/mL (Routinely tested).



More than 600 biotinylated proteins are available! Scan the QR code to check the full list



### ■ Star Staining: New Generation Tools for CAR Detection

**Acro' BIOSYSTEMS** **Star Staining** *Shining Your CAR Detection*

- ★ Using new-generation site-specific labeling technology
- ★ Maintain natural conformation and modification
- ★ High batch-to-batch consistency and uniformity
- ★ Uniquely designed for CAR detection

More fluorescent labels available:

FITC	Alexa Fluor 555
PE	Alexa Fluor 647
APC	Alexa Fluor 488

Star Staining products have been verified by non-specific binding assay to ensure the specificity of CAR detection results in clinical trials.

#### ► Product Features

★ New-generation site-specific labelling technology to maintain natural bioactivity.

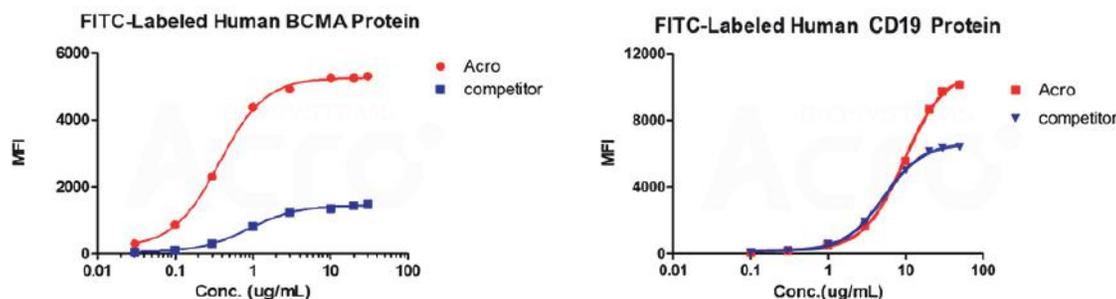
★ High specificity and sensitivity verified by flow cytometry.

- ★ No non-specific binding to non-transduced PBMCs.
- ★ High batch-to-batch consistency and uniformity.
- ★ FITC\PE\APC\Alexa Fluor 488\555\647 labelled proteins are available.

## ► Assay Data

### >>> High bioactivity

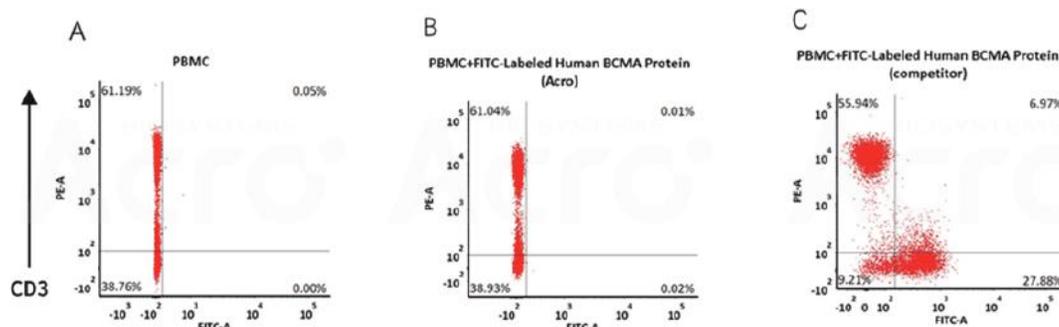
Higher binding activity than that of competitor products



Binding activity of FITC-Labeled Human BCMA and CD19 protein from two different vendors were evaluated by the FACS analysis. The result showed that ACRO's Star Staining FITC-Labeled Human BCMA (Cat. No. [BCA-HF2H3](#)) and CD19 (Cat. No. [CD9-HF2H3](#)) protein have a much higher binding activity than that of the other competitor.

### >>> No non-specific binding to non-transduced PBMCs

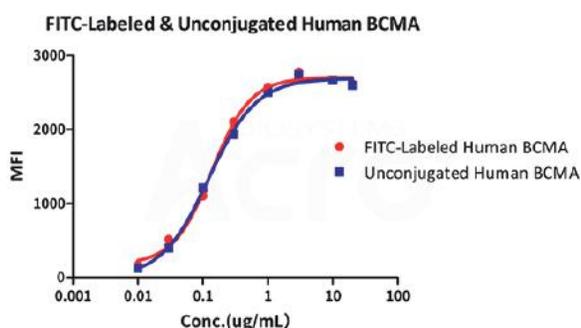
Star Staining series products have been verified by non-specific binding assay to non-transduced PBMC cells to ensure the specificity and accuracy of CAR expression detection results in the process of clinical trials.



No non-specific binding to non-transduced PBMCs between FITC-Labeled Human BCMA Protein of ACRO and competitor. 5e5 of non-transduced PBMCs were stained with FITC-Labeled Human BCMA Protein and anti-CD3 antibody, washed and then analysed with FACS. PE signal was used to evaluate the expression of CD3+ T cells in non-transduced PBMCs, and FITC signal was used to evaluate the non-specific binding activity to non-transduced PBMCs.

### >>> Maintain natural bioactivity

High binding capacity before and after conjugation, verified by FACS.



Binding activity of the Human BCMA before and after FITC labelling was evaluated in the above FACS analysis. The result shows that FITC-Labeled BCMA (Cat. No. [BCA-HF2H3](#)) and unconjugated Human BCMA have almost the same level of binding activity.

## ► Product List

### >>> Hot products

BCMA	CD19	MSLN	GPC3	HER2
CD7	CD33	CD30	EGF R	GUCY2C
NKG2D	FAP	Nectin-4	CD37	
Protein L	CD22	OX40	TSLPR	
CD147	PD-1	CD300e	MUC-1	

### >>> Star Staining fluorescent labels

Alexa Fluor 488	Alexa Fluor 555	Alexa Fluor 647
APC	PE	FITC



Scan the QR code to find out more

# Discovery Solutions for Cell and Gene Therapy



BIOSYSTEMS  
**Acro**

## ■ GMP Grade Cytokines

ACROBiosystems is committed to the development of high-quality reagents for use in the clinical stage of immune cell therapy drugs. Based on the GMP-grade quality management system platform, combined with the production specifications of cell therapy drugs, we have successfully developed a series of high-quality GMP-grade cytokines such as IL-15, IL-7, IL-21. These products are produced with strict quality management and drug-level release testing standards. Our GMP-grade cytokines\* can better support the clinical research of immune cell therapy drugs and accelerate the global regulatory approval of biological products.

*\*ACROBiosystems GMP grade products are designed for R&D, manufacturing and in vitro use and are not intended for direct use in humans.*

## ► Product Features

### ★ Strict Quality Control Standards

- 16 quality control standards.
- Excellent safety profile (testing for sterility, mycoplasma, endotoxin, and residual impurities).
- High stability and batch-to-batch consistency.

### ★ GMP Grade Quality Management System

- ISO 5 cleanrooms used for filling.
- Raw materials and packing materials are registered.
- Facilities are available for online and on-site audits.

### ★ Accelerating Global Regulatory Approval of Biological Products

- A comprehensive set of regulatory documents is available.
- Validation reports for analysis methods are available by request.
- FDA DMF filing in progress.

## ► Product List

Molecule	Cat. No.	Product Description
IL-15	GMP-L15H13	GMP Human IL-15
IL-7	GMP-L07H14	GMP Human IL-7
IL-21	GMP-L21H18	GMP Human IL-21

## ► ACROBiosystems GMP Quality Management System

- Manufactured and QC tested under GMP compliance
- Designed under ISO 9001:2015 and ISO 13485:2016
- Animal-Free materials
- Materials purchased from approved suppliers
- ISO 5 cleanrooms and automatic filling equipment
- Qualified and well-trained personnel
- Quality-related documents reviewed and approved by QA
- Fully batch production and control records
- Equipment maintenance and calibration
- Validation of analytical procedures
- Stability studies conducted
- Comprehensive regulatory support files

### ★ Automatic filling equipment

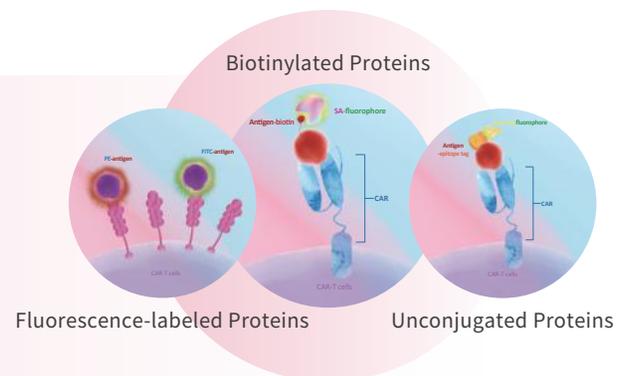


### ★ Sterilization equipment



## ■ CAR-T Target Proteins

To support the CAR-T cell drugs development research, ACROBiosystems has developed more than 50 CAR-T targets, including CD19, BCMA, CD22, MSLN, and GPC3 using professional protein research and development platform.

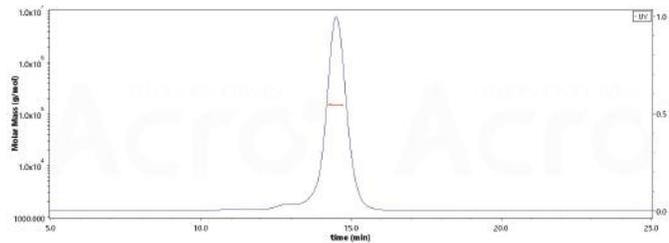


## ► Product Features

- ★ More than 50 CAR-T Targets.
- ★ PE / FITC / Biotin / Unconjugated forms available.
- ★ Variety of tags including His Tag / Human IgG1 Fc Tag / Mouse IgG2a Fc Tag / Llama IgG2b Fc Tag.
- ★ Human, Cynomolgus, mouse, and more species.
- ★ Suitable for variety of application scenarios such as immunisation, antibody screening, antibody affinity measurement and species cross-verification.
- ★ Some products have completed the FDA DMF filing (DMF number: 034936), which can support your IND, NDA, and BLA.

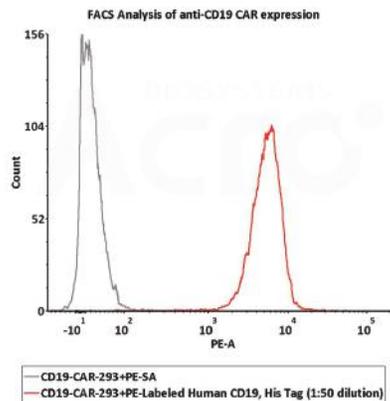
## ► Assay Data

### >>> High purity verified by HPLC-MALS



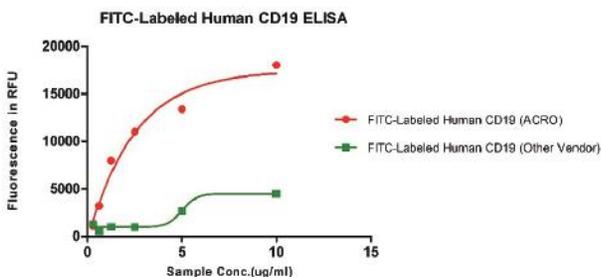
The purity of Human CD19 (20-291), Fc Tag (Cat. No. [CD9-H5251](#)) is more than 95% and the molecular weight of this protein is around 140-160 kDa as verified by SEC-MALS.

### >>> High bioactivity verified by flow cytometry

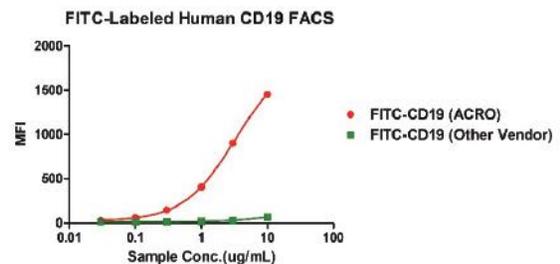


$1e6$  of the anti-CD19 CAR-293 cells were stained with 100  $\mu$ L of 1:50 dilution (2  $\mu$ L stock solution in 100  $\mu$ L FACS buffer) of PE-Labeled Human CD19 (20-291), His Tag (Cat. No. [CD9-HP2H3](#)). PE Streptavidin was used as negative control (QC tested).

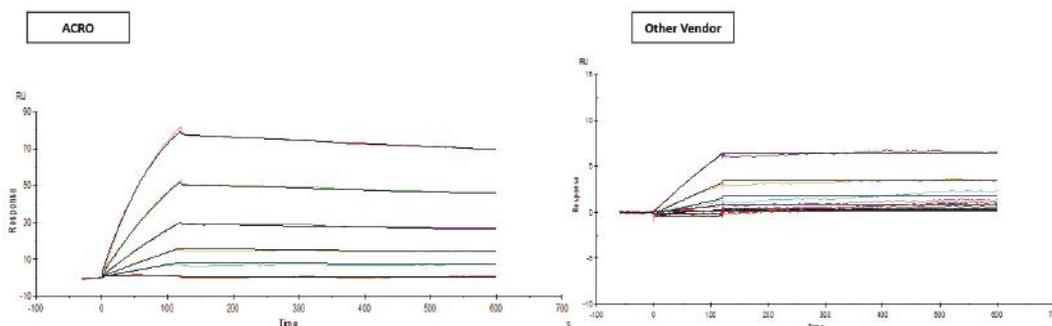
### >>> Higher binding activity than that of competitors



Binding activity of FITC-Labeled Human CD19, His Tag from two different vendors were evaluated in the ELISA analysis against FMC63 Mab. The result showed that ACRO's FITC-Labeled Human CD19, His Tag has a much higher binding activity than that of the other vendor.



Binding activity of FITC-Labeled Human CD19, His Tag from two different vendors were evaluated in the flow cytometry analysis against anti-CD19-CAR-293 cells. The result showed that ACRO's FITC-Labeled Human CD19, His Tag has a much higher binding activity than that of the other vendor.



Binding activity of Human CD19, His Tag from two different vendors were evaluated by SPR assay against FMC63 Mab. The result showed that ACRO's Human CD19, His Tag can bind FMC63 Mab with an affinity constant of 2.95 nM which is much higher than that of the other vendor.

## ► Popular CAR-T Targets from ACROBiosystems

CD19	BCMA	CD22	CD20	CD123	CD33	CD30	CD38	CS1
CD138	CD37	CD4	CD5	CD7	CD72	CD99	CLL-1	GPRC5D
LILRB4	HER2	MSLN	EGFR	GPC3	MUC1	PSMA	EBV	B7-H3
CAIX	CD133	CD147	CD47	CD56	CD70	CEA	CLDN18	DLL3
EGFRVIII	EpCAM	FAP	FOLR1	GUCY2C	HER3	HGFR	IL13RA2	MUC16
Nectin-4	NKG2D	PSCA	ROR1	uPAR	VEGFR2			

\* Note: Red background are haematoma targets, and others are solid tumour targets

## ■ Anti-FMC63 Antibodies

ACROBiosystems has developed an anti-idiotypic antibody against FMC63 scFv, named Monoclonal Anti-FMC63 scFv Antibody, which can specifically recognise the antigen-recognition domain of FMC63 derived anti-CD19 CARs with high sensitivity and specificity. The featured collection of products can overcome the challenges for complex cell components, low CAR-T cell concentration and non-specific background.

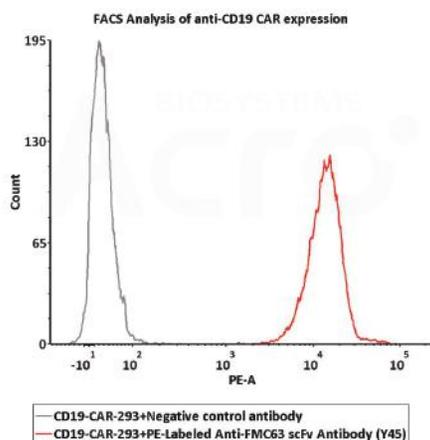
The performance of anti-FMC63 scFv monoclonal antibody was validated by flow cytometry (FCM) and ADA assay in house and shown to be suitable for detecting FMC63 derived anti-CD19 CARs in clinical trials.

## ► Product Features

- ★ APC / PE / FITC labelled forms are available to simplify your test procedure.
- ★ High sensitivity and specificity as verified by FACS and ADA assay.
- ★ Specifically recognises the antigen-binding site of FMC63 derived CD19 CARs.
- ★ Suitable for PK study and ADA assay.

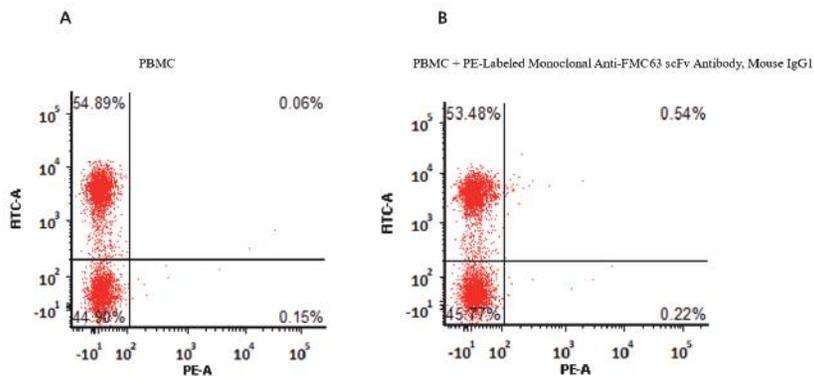
## ► Assay Data

### >>> High sensitivity as validated by FACS



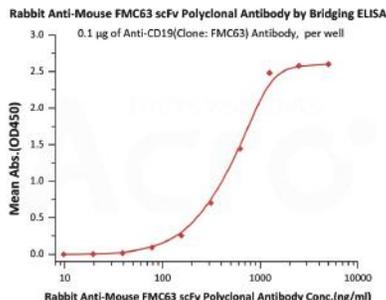
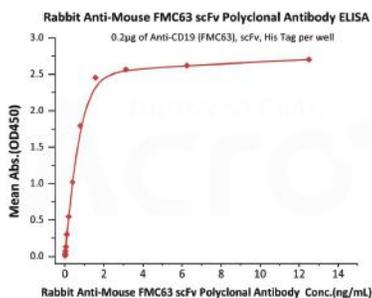
1e6 of the Anti-CD19 CAR-293 cells were stained with 100  $\mu$ L of 1:50 dilution (2  $\mu$ L stock solution in 100  $\mu$ L FACS buffer) of PE-Labelled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Cat. No. [FM3-HPY53](#)) and negative control antibody respectively. PE signal was used to evaluate the binding activity (QC tested).

>>> No non-specific binding to non-transduced PBMCs



5e5 of PBMCs were stained with PE-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Cat. No. [FM3-HPY53](#)) and anti-CD3 antibody, washed followed by FACS analysis. FITC signal was used to evaluate the expression of CD3+ T cells in PBMCs, and PE signal was used to evaluate the non-specific binding activity to PBMCs.

>>> Suitable for ADA assay development



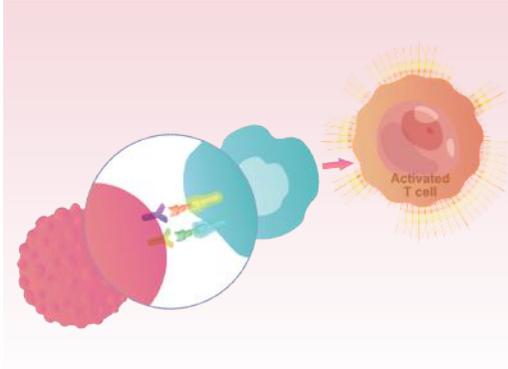
Immobilized FMC63 scFv at 2 µg/mL (100 µL/well) can bind Rabbit Anti-Mouse FMC63 scFv Polyclonal Antibody (Cat. No. [FM3-S93](#)) with a linear range of 0.098-0.78 ng/mL (QC tested).

Immobilized anti-CD19 antibody (Clone: FMC63) at 1 µg/mL, add increasing concentrations of Rabbit Anti-Mouse FMC63 scFv Polyclonal Antibody (Cat. No. [FM3-S93](#)) and then add Biotinylated anti-CD19 antibody (Clone: FMC63) at 2 µg/mL. Detection was performed using HRP-conjugated streptavidin with sensitivity of 78 ng/mL (QC tested).

► Product List

Cat. No.	Product Description
FM3-Y45A1	Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (Carrier-free) (recommended for ADA assay) DMF Filed
FM3-Y45	Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) DMF Filed
FM3-Y45P1	Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (HEK293) DMF Filed
<b>FM3-FY45</b>	<b>FITC-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) DMF Filed<sup>New</sup></b>
FM3-BY54	Biotinylated Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1, Avitag™ (Y45) DMF Filed
<b>FM3-HPY53</b>	<b>PE-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (Site-specific conjugation) DMF Filed<sup>New</sup></b>
FM3-S93	Rabbit Anti-Mouse FMC63 scFv Polyclonal Antibody (recommended for ADA assay) (MALS verified)

## ■ Other Recommended Products for CGT



### ▶ Anti-CD3/CD28 Ab-coupled Magnetic Beads

#### Recommended for human T cell activation & expansion

- Microbial testing and ultra-low endotoxin (< 2 EU/mg).
- Efficient activation and expansion.
- High batch-to-batch consistency.
- Highly stable and convenient for storage and transportation in lyophilisation.
- RUO grade products can save the cost in early study.

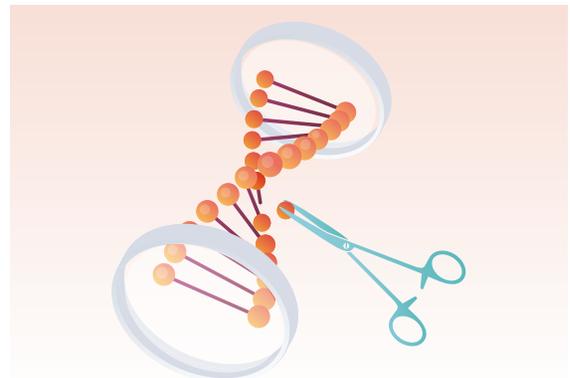
**GMP grade products are coming**

### ▶ CRISPR-Cas Nuclease

#### Suitable for structure design and gene edition

- High enzyme activity: improve the cutting efficiency up to 90% and make it easier to edit gene by CRISPR.
- High purity verified by SDS-PAGE(>90%) and SEC-MALS(>95%).
- Bioactivity verified by *in-vivo/in-vitro* assay: gene knockout activity in vivo and fragment cleavage activity in vitro.
- Low endotoxin less than 0.1 EU/ug.
- High stability and batch-to-batch consistency.
- RUO grade products can save the cost in early study.

**GMP grade products are coming**



Scan the QR code to find out more

# Solutions for Therapeutic Antibodies

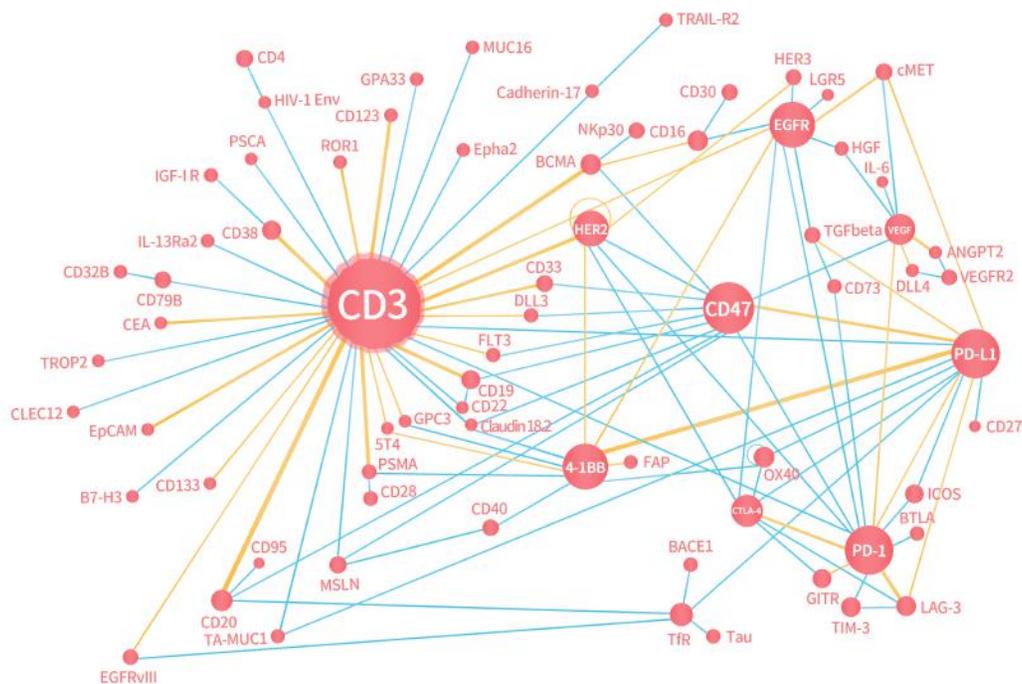


## ■ Bispecific Antibody Target Proteins

ACROBiosystems provides a wide range of high-quality bispecific antibody target proteins with unique advantages.

### ► Product Features

- ★ Extensive product catalogue: more than 70 popular target proteins that fully meet the needs of bispecific antibody development.
- ★ Various species and tags: suitable for multiple applications, such as immunisation, antibody screening assay and binding affinity testing.
- ★ High purity and homogeneity in structure: verified by SDS-PAGE and SEC-MALS.
- ★ High bioactivity: verified by ELISA/SPR/BLI with free protocols available.
- ★ High batch-to-batch consistency: strict quality control by multiple analytical technique platforms.



## ► List of Target Molecules for Bispecific Antibodies

B7-H3	BCMA	CD16	CD19	CD20
CD3	CD38	CD40	CD47	CEACAM-5
CTLA-4	DLL3	EGF R	EpCAM	ErbB3
4-1BB	FAP	Her2	HGF	HGF R
ICOS	IL-1 beta	IL-13	IL-17A	IL-3 R alpha
IL-4	IL-6 R alpha	LAG-3	LRP-5	LRP-6
Mucin-1	OX40	PD-1	PD-L1	PSMA
ROR1	TGF-beta 1	TIM-3	TNF-alpha	VEGF R2

**Popular products: high-quality CD3 proteins**

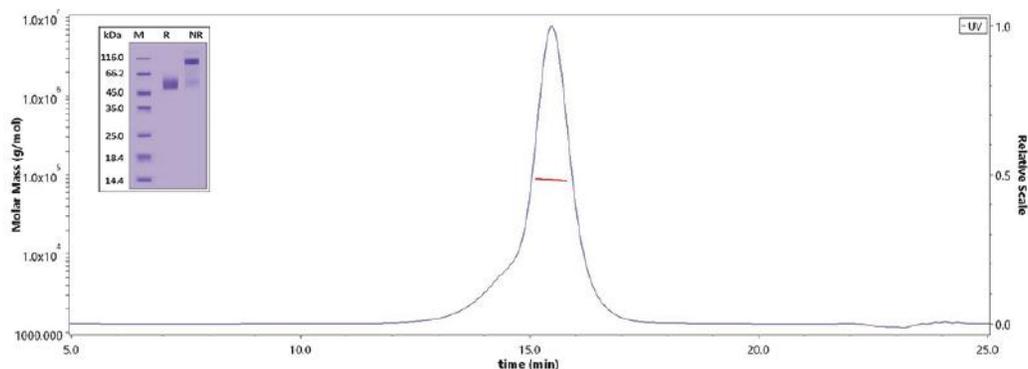
## ► Product Features

- ★ Extensive product catalogue: CD3E, CD3D, CD3G, CD3E&CD3D and CD3E&CD3G.
- ★ Homogeneous structure: CD3E&CD3D and CD3E&CD3G are 1:1 heterodimers as verified by non-reductive electrophoresis and MALS.
- ★ Biological activity verified by binding with common antibodies such as OKT3, SP34-2, UCHT1 and BCMA × CD3.

- 👍 Human CD3 epsilon & CD3 delta Heterodimer Protein (Cat. No. CDD-H52Wa)
- 👍 Human CD3E epsilon & CD3G gamma heterodimer protein, Fc, His Tag & Fc, Flag Tag (Cat. No. CDG-H52W9)

## ► Assay Data

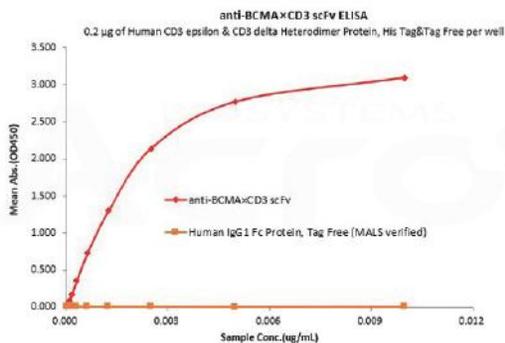
>>> 1:1 heterodimer verified by nonreductive electrophoresis and MALS



Human CD3E&CD3D Heterodimer Protein (Cat. No. [CDD-H52Wa](#)) on SDS-PAGE under reducing (R) and non-reducing (NR) condition and the purity of the protein is greater than 95%. The purity of the protein is more than 85% and the molecular weight of this protein is around 80-90 kDa verified by SEC-MALS.

### >>> Higher activity, in line with drug development requirements

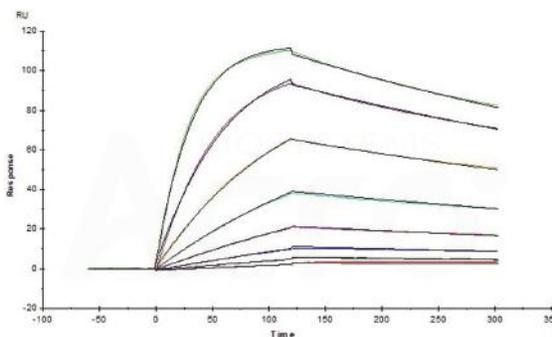
The combination with OKT3, SP34-2, UCHT1 and other popular antibodies has been verified to fully meet the drug development requirements, which can accelerate the development of antibody drugs. Such as: CD3E & CD3D (Cat. No. CDD-H5255) ELISA verification results.



ELISA verified that Human CD3 epsilon & CD3 delta Heterodimer Protein, His Tag & Tag Free (MALS verified) (Cat. No. [CDD-H52W1](#)) can specifically bind to anti-BCMA x CD3 scFv- IgG1 Fc Tag with a linear range of 0.08- 3 ng/mL, does not bind to the isotype control Human IgG1 Fc Protein, Tag Free (MALS verified) (Cat. No. [FCC-H5214](#)).

### >>> Suitable for various applications at different stages of drug development

- Antibody drug identification and quality control



Human CD3 epsilon & CD3 gamma Heterodimer Protein, Fc, His Tag & Fc, Flag Tag (Cat. No. [CDG-H52W9](#)) captured on CM5 chip via Anti-human IgG Fc antibodies surface can bind Bispecific T-cell Engager (CD3 x BCMA) with an affinity constant of 1.13 nM as determined in a SPR assay (Biacore T200) (Routinely tested).

## ■ ADCs Development Solutions

ADCs design requires a rational selection of targets, antibodies, linkers, small molecule drugs and their rational combinations; antibody conjugation technology and drug resistance of ADCs. Among them, the selection of the target, the selection of the linker and the preclinical efficacy evaluation are the focus of the ADCs research and development process.

To meet the needs of ADCs development, ACROBiosystems can provide:

- ★ A variety of high-quality target proteins.
- ★ SPR/BLI analytical service.
- ★ MMPs/Cathepsin/uPA for cleavable linker.
- ★ Anti-payload antibodies, anti-idiotypic antibodies (ADA) for immunogenicity and PK analysis.

This series of products covers the whole process of ADCs from antibody preparation, screening to post-production quality control, helping to accelerate ADCs research and development.

**Acro** BIOSYSTEMS

# Antibody-Drug Conjugates (ADCs): the Magic Bullets for Treatment

**Power your Magic Bullets**

- Target** • 50+ high-quality ADC target proteins
- Linker** • Proteases for cleavable linkers
- PK** • Tools for ADCs PK/PD analysis
- Service** • SPR/BLI analytical & ADA service

## ► Featured Products

### 👍 Exclusive LIV-1 proteins

- Multiple species: Human, Mouse, Cynomolgus, Rat, etc.
- Expression sequences were designed based on the SGN-LIV1A binding epitope.

### 👍 Cathepsin B

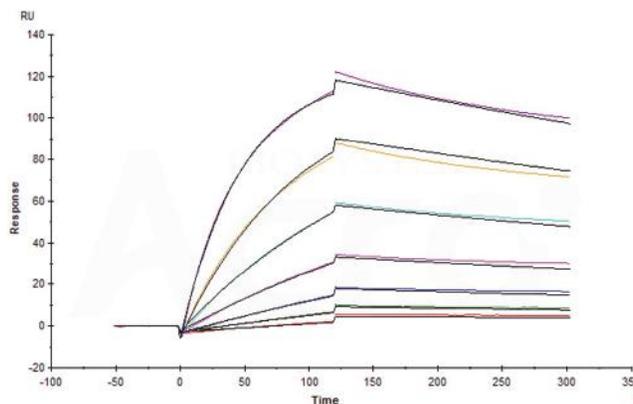
- Natural conformation: HEK293 expressed protein to ensure the natural structure.
- High enzyme activity: enzyme activity > 2,500 pmol/min/μg.

### 👍 Anti-MMAE monoclonal antibody (Cat.No.MME-M5252)

- High sensitivity and stability verified by Disitamab Vedotin (RC-48, approved MMAE derived ADC).

## ► Assay Data

### >>> LIV-1 proteins are of high bioactivity as verified by SPR

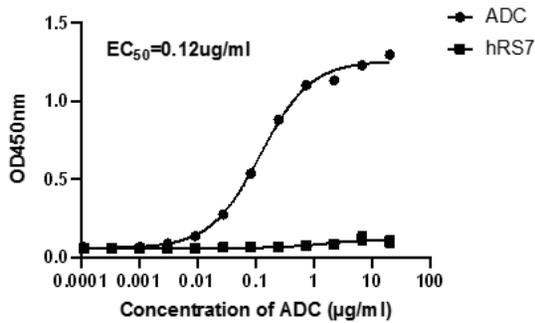


Anti-LIV-1 mAb captured on CM5 chip via anti-human IgG Fc antibody can bind Human LIV-1, His Tag (Cat. No. [LV1-H5223](#)) with an affinity constant of 5.24 nM as determined in a SPR assay (Biacore T200) (Routinely tested).

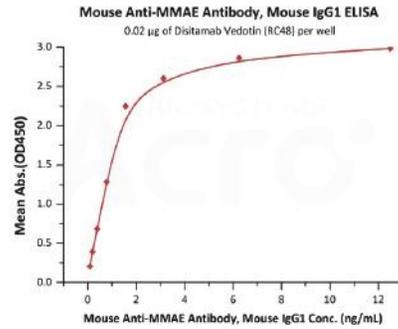
### >>> Enzyme activity of proteases for peptide linker are higher than 2500 pmol/min/μg

<b>Products</b>	Cat. No: <a href="#">CTB-H5222</a> Human Cathepsin B / CTSB Protein, His Tag (active enzyme)	Cat. No: <a href="#">MM9-H5221</a> Human MMP-9 Protein, His Tag (active enzyme)
<b>Hydrolysed substrate</b>	Fluorogenic peptide substrate Z-LR-AMC	Fluorogenic peptide substrate Mca-PLGL-Dpa-AR-NH2
<b>Enzymatic activity (pmol/min/μg)</b>	> 2500	> 2500

>>> Anti-MMAE antibody binds MMAE with high specificity



The EC<sub>50</sub> value of anti-MMAE antibody to MMAE-conjugated hRS7 (MMAE-ADC) was 0.12 µg/ml. The unconjugated hRS7 antibody was used as negative control.

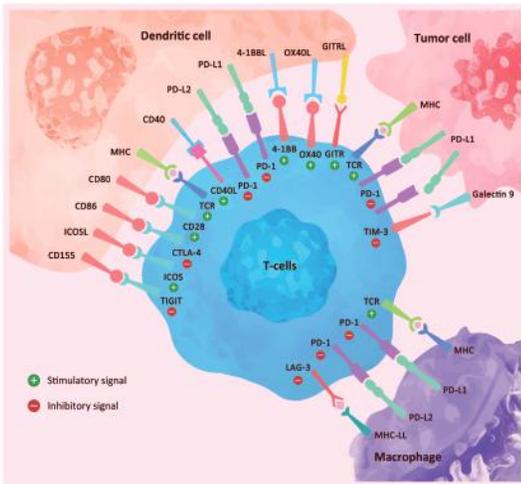


Immobilised Disitamab Vedotin (RC48) at 0.2 µg/mL (100 µL/well) can bind Mouse Anti-MMAE Antibody, Mouse IgG1 (Cat. No. [MME-M5252](#)) with a linear range of 0.1-2 ng/mL (QC tested).

■ Immune Checkpoint Proteins

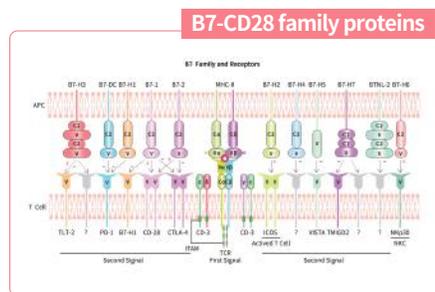
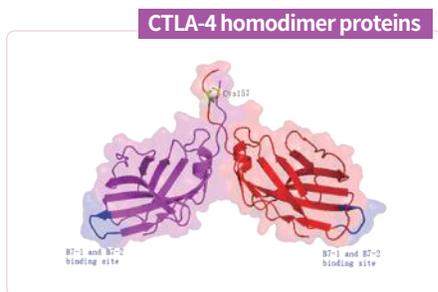
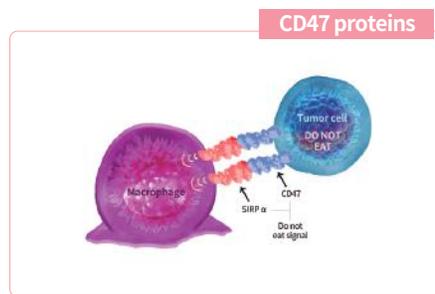
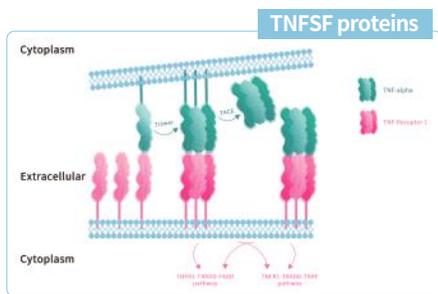
ACROBiosystems has developed a series of immune checkpoint protein products with different species, tags and labels.

► Product Features



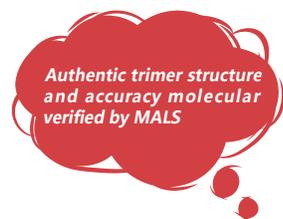
- ★ 80+ immune checkpoint molecules.
- ★ High purity and authentic conformation verified by MALS/HPLC.
- ★ High bioactivity as verified by ELISA/SPR/BLI/FACS, etc.
- ★ Suitable for immunisation, antibody screening, and cell-based assay.

► Featured Products

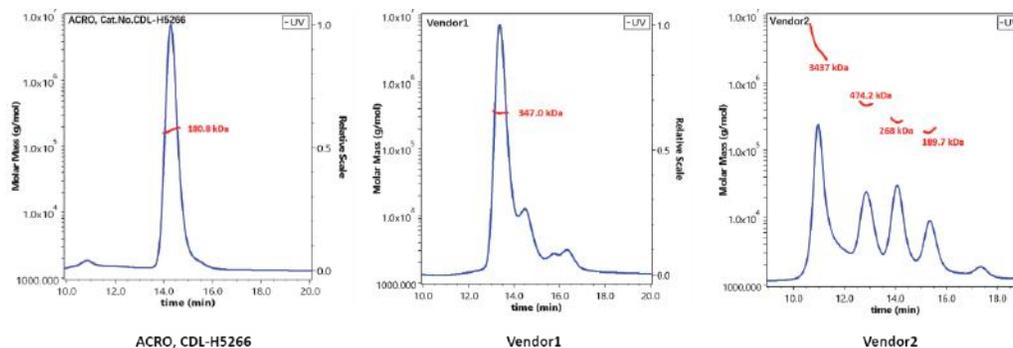


## ► Assay Data

### >>> MALS verifies true molecular weight and aggregate state



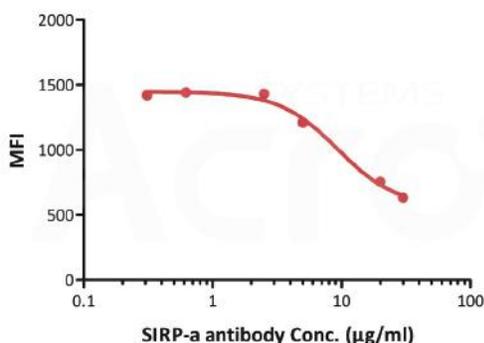
CD27L protein(active trimer, MALS verified) from ACROBiosystems **VS** CD27L protein from other vendors



ACRO, CDL-H5266 Vendor1 Vendor2  
Comparison of CD27L MALS from Different Sources

### >>> Neutralising antibody binding assay: CD47 & SIRP $\alpha$ pathway

#### Competitive experiment of neutralizing SIRP- $\alpha$ antibody



FACS analysis shows that the binding of Human CD47 to ACHN expressing SIRP- $\alpha$  was inhibited by increasing concentration of neutralising SIRP- $\alpha$  antibody. The concentration of Human CD47 used is 20  $\mu$ g/mL. IC<sub>50</sub>=9.334  $\mu$ g/mL.

## ► Product List

Co-inhibitory molecules						
PD-1	B7-H4	CD86(B7-2)	CTLA-4	CD111	Nectin-2	SIRP alpha V2
PD-L1	B7-H5	CD96	LAG-3	DNAM-1	Nectin-3	SIRP gamma
PD-L2	BTLA	CD47	TIGIT	Galectin-9	PVRIG	CD160
B7-H3	CD80(B7-1)	CD155	TIM-3	HVEM	SIRP alpha	

Co-stimulatory molecules						
4-1BB Ligand	ICOS Ligand(B7-H2)	CD40 Ligand	CD48	CD27	B7-H7	NKp30
4-1BB	ICOS	CD40	CD28	B7-1	LIGHT	
OX40 Ligand	GITR Ligand	CD30 Ligand	CD28H	B7-2	HVEM	
OX40	GITR	CD30	CD27 Ligand	B7-H6	Nectin-2	

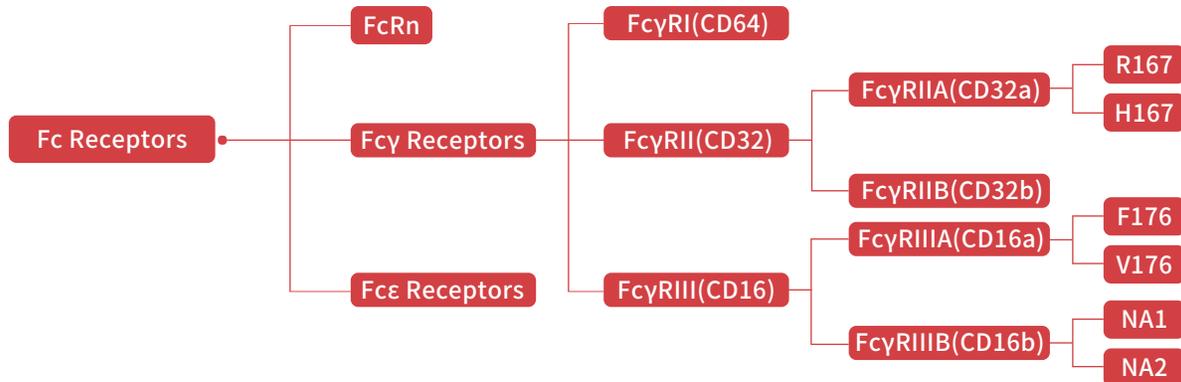
Others						
LILRA1	LILRB1	LAIR-1	SLAMF4(2B4)	BTN1A1	MARCO	ILDR2
LILRA2	LILRB2	LAIR-2	SLAMF5(CD84)	BTN3A1	MSP1D1	HLA-G
LILRA3	LILRB3	SLAMF1	SLAMF6(NTB-A)	BTN3A2	Nectin-1	
LILRA5	LILRB4	SLAMF2(CD48)	SLAMF7	BTN3A3	Nectin-4	
LILRA6	LILRB5	SLAMF3(CD229)	SLAMF8(BLAME)	CD161	TREM2	

## ■ Fc Receptor Proteins

### ► Product Features

- ★ Expressed by HEK293 Cells: post-translational modification and proper protein folding.
- ★ Multiple species: Human, Mouse, Cynomolgus/Rhesus macaque, Rat, Porcine, Rabbit, Feline, Bovine, can be fully applied to different cross species experiments.
- ★ High purity: SDS-PAGE verification purity >95%, SEC-MALS verification purity >90%.
- ★ Low endotoxin: <1.0 EU/μg.

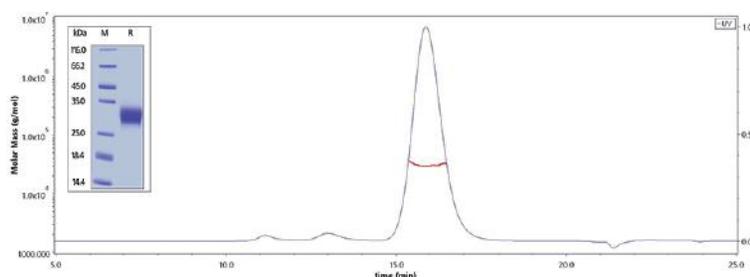
### ► Product List



### ► Assay Data

#### >>> High purity verified by MALS

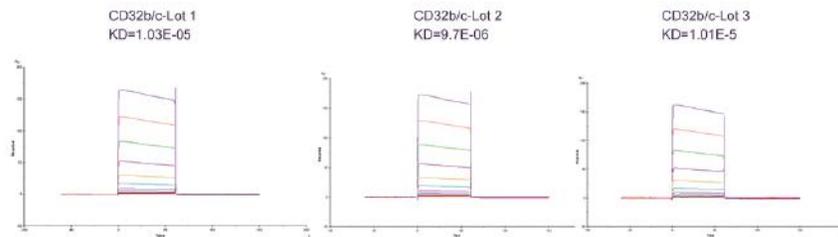
The monomeric form of Fc receptors reflects its natural state, and Fc receptors with the highest monomer purity can be used to verify binding affinity with antibodies to avoid false high binding activity due to aggregation effects. Therefore, we have established strict internal control standards to test monomer purity by SEC-MALS testing. Only batches meeting all purity requirements are released.



Validated by SDS-PAGE, Human CD32a (R167), His Tag (Cat. No. [CDA-H5221](#)) were more than 95% pure; validated by SEC-MALS, Human CD32a (R167), His Tag (Cat. No. [CDA-H5221](#)) H5221) is more than 90% pure and has a molecular weight of 25-35 kDa.

## >>> High batch-to-batch consistency

We routinely apply strict quality control measures to ensure consistent performance of our product. As shown below, the batch variation among the tested samples is negligible.



SPR verified that Human Fc gamma R1IB / CD32b Protein (Cat. No. [CDB-H5228](#)) immobilised on a CM5 chip could bind to Rituximab (Rituximab) with an affinity constant of 10  $\mu$ M (Biacore T200).

## ■ Cytokines

Cytokine is a generic name that can be divided into interleukins (ILs), growth factors, tumor necrosis factors (TNFs), chemokines, colony-stimulating factors (CSFs), interferons (IFNs), etc. ACROBiosystems is providing you with a series of recombinant cytokines and their receptors with high purity, high bioactivity, and high batch-to-batch consistency to accelerate your scientific research and drug development programs.

BIOSYSTEMS  
**Acro** *Cytokines*

GMP Grade Cytokines  
ActiveMax® Cytokines  
Promising Therapeutic Targets

High purity High bioactivity High batch-to-batch consistency

Interleukins Growth Factors Chemokines TNFs IFNs CSFs

## ► Product Features

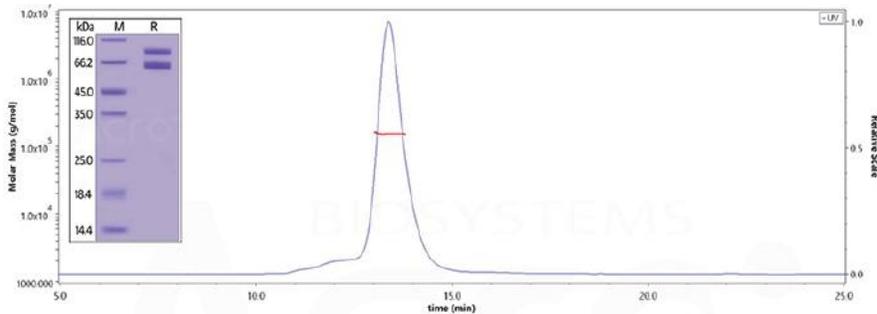
- ★ Closer to the natural conformation in humans due to expressed by HEK293 cells.
- ★ Various species: Human, Mouse, Rat, Cynomolgus, Rhesus Macaque, Rabbit, Canine, suitable for species cross experiments.
- ★ Various labels and tags.
- ★ Biotinylated cytokines are exclusively produced using the **Avitag™ technology**: the biotinylation only happens on the lysine residue of Avi tag; no interference with the target protein's natural binding activities; the protein orientation is uniform when immobilized on an avidin-coated surface.
- ★ High purity and homogeneity in structure are verified by both SDS-PAGE and SEC-MALS.
- ★ High bioactivity of binding with receptor or antibody is verified by ELISA/SPR/BLI/ cell-based assay. Protocols shared.
- ★ Strict quality control to guarantee high batch-to-batch consistency (ELISA as QC test).
- ★ More comprehensive cytokine products, hot cytokine targets are available.

## ► Hot Cytokines

IL-2 and IL-2 Receptors 	IL-4 and IL-4 Receptors	IL-6 and IL-6 Receptors
IL-23A&IL-12B	VEGF Family	TGF-beta
FGF	TNF- $\alpha$	GDF-15
CSF	EGF and EGF Receptors	IGF-I R
CTGF	Complement C3	Complement C5

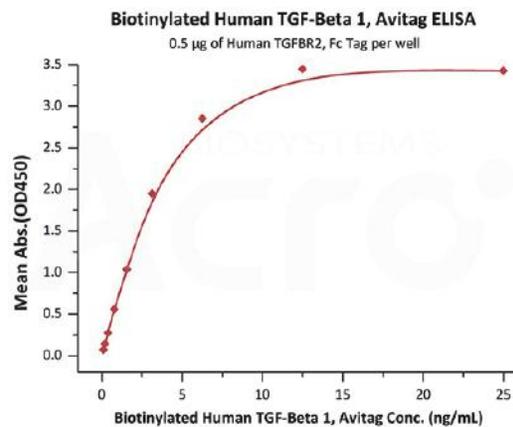
## ► Assay Data

### >>> High purity and homogeneity in structure



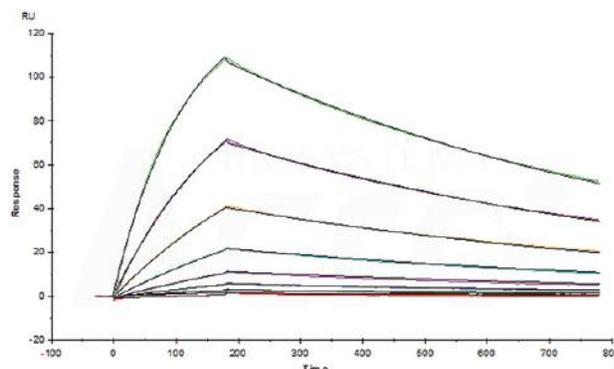
Human IL-2RB&IL-2RG Heterodimer Protein, Fc Tag&Fc Tag (MALS verified) (Cat. No. [ILG-H5254](#)) on SDS-PAGE under reducing (R) condition. The purity of the protein is greater than 95%. As verified by SEC-MALS, the purity is more than 90% and the molecular weight of this protein is around 140-160 kDa.

### >>> High bioactivity verified by ELISA (QC tested)

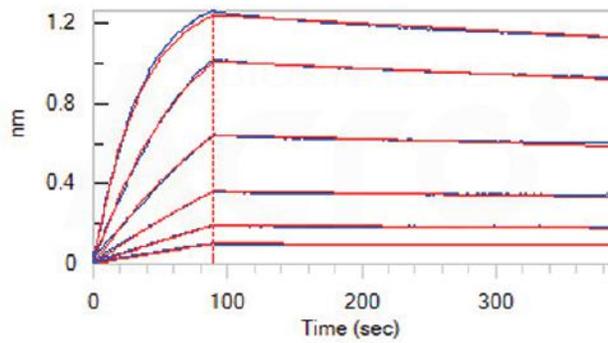


Immobilized Human TGFBI, His Tag (Cat. No. [TG1-H524x](#)) at 1  $\mu$ g/mL (100  $\mu$ L/well) can bind Human TGFBR2, Fc Tag (Cat. No. [TG2-H5252](#)) with a linear range of 0.3-2 ng/mL (QC tested).

### >>> Affinity verified by SPR/BLI

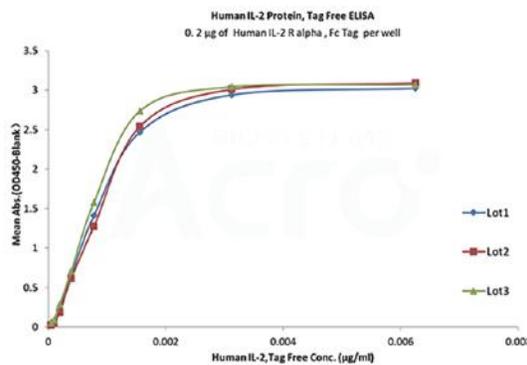


Erbitux (Cetuximab) captured on CM5 chip via anti-human IgG Fc antibodies surface, can bind Human EGFR, His Tag (Cat. No. [EGR-H5222](#)) with an affinity constant of 1.3 nM as determined in a SPR assay (Biacore T200).



Loaded Anti-IL23A & IL12B MAb (P40 domain) on Protein A Biosensor, can bind Human IL-12B&IL-12A Heterodimer Protein, His Tag&Flag Tag (Cat. No. [IL2-H4210](#)) with an affinity constant of 1.07 nM as determined in BLI assay (ForteBio Octet Red96e).

### >>> High batch-to-batch consistency

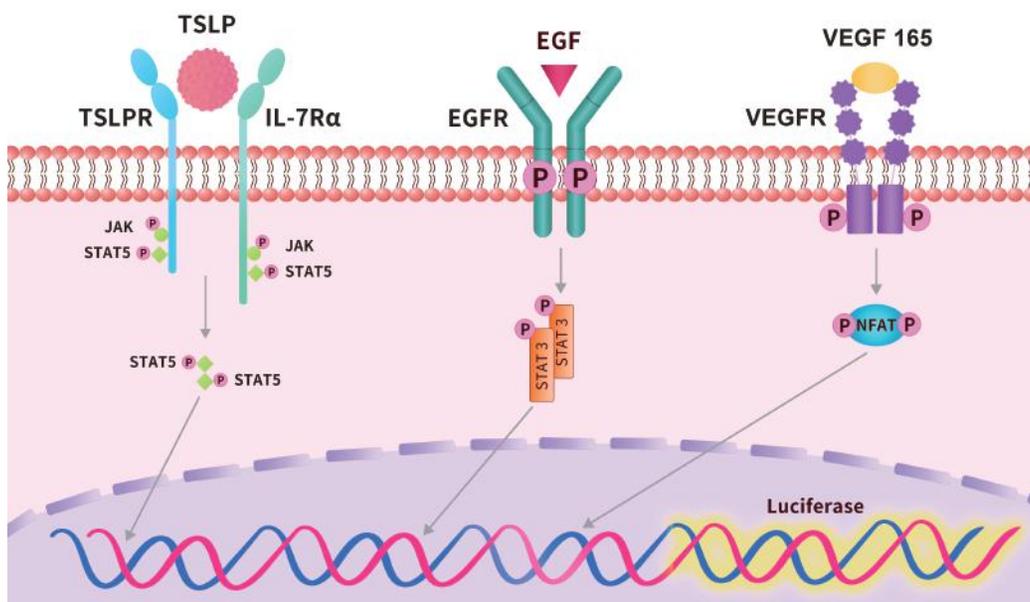


Bioactivity of three different lots of Human IL-2 Protein, Tag Free (Cat. No. [IL2-H4113](#)) is verified by binding with Human IL-2 R alpha, Fc Tag (Cat. No. [ILA-H5251](#)), and the result shows very high batch-to-batch consistency.

## ■ Reporter Cell Lines

To meet the needs of bioactivity testing during biopharmaceutical products research and development, ACROBiosystems have successfully established a reporter gene cell platform and continues to develop a series of high-quality reporter gene cell line products based on the luciferase reporter gene system.

The reporter cell developed by ACRO have passed the functional and stability verification and can be applied to signal transduction function research, early drug discovery, high-throughput drug screening, biological activity assay, stability assay, batch release, etc. R&D provides a stable and convenient tool.



## ► Product Features

- ★ Based on the MoA, for drug mechanism research
- ★ Strong detection signal to ensure high sensitivity
- ★ Large detection window, suitable for different efficacy screening
- ★ One-stop service with ancillary product supply
- ★ Clear applications, convenient for customers to choose
- ★ High passage stability, suitable for methodological verification

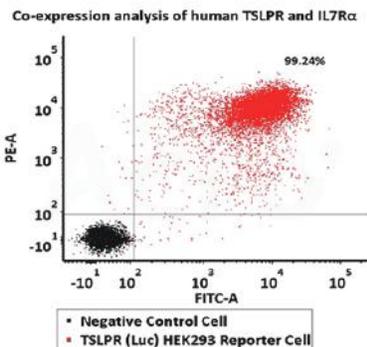
## ► Application Scenarios

- ★ Intracellular signal transduction pathway research
- ★ Interactions between ligand receptors
- ★ Early drug screening and new drug development

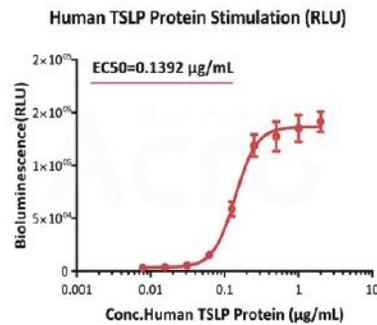
## ► Assay Data

### TSLPR (Luc) HEK293 Reporter Cell

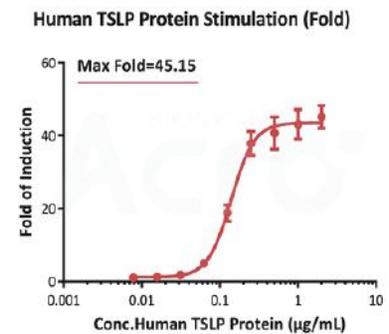
#### >>> Cell property verification



Co-expression analysis of human TSLPR and IL7Ra on TSLPR (Luc) HEK293 Reporter Cell by FACS. Cell surface staining was performed on TSLPR (Luc) HEK293 Reporter Cell or negative control cell using PE-labeled anti-TSLPR antibody and FITC-labeled anti-IL7Ra antibody.

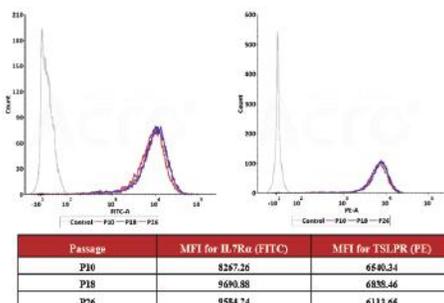


Response to human TSLP protein (RLU). The TSLPR (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human TSLP protein (ACROBiosystems, Cat.No.TSP-H52Hb). The EC<sub>50</sub> was approximately 0.1392 µg/mL.

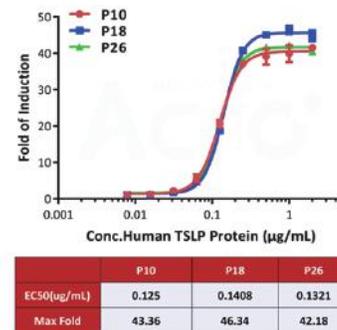


Response to human TSLP protein (Fold). The TSLPR (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human TSLP protein (ACROBiosystems, Cat.No.TSP-H52Hb). The max induction fold was approximately 45.15.

#### >>> Generational Stability Verification



Passage stability analysis of receptors expression by FACS. Flow cytometry surface staining of human TSLPR and IL7Ra on TSLPR (Luc) HEK293 Reporter Cell demonstrates consistent mean fluorescent intensity across passage 10-26. (A) Human IL7Ra expression analysis. (B) Human TSLPR expression analysis.

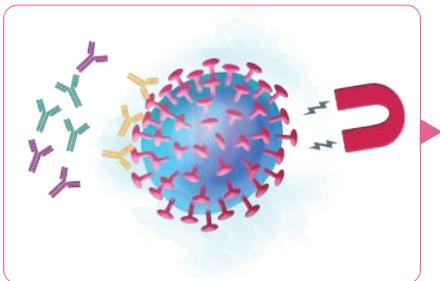


Passage stability analysis by Signalling Bioassay. The continuously growing TSLPR (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human TSLP protein. Human TSLP protein stimulated response demonstrates passage stabilization (fold induction and EC<sub>50</sub>) across passage 10-26.

## ► Product List

Cat. No.	Host Cell	Product Description	Applications
CHEK-ATF044	HEK293	VEGFR2 (Luc) HEK293 Reporter Cell	Screen for anti-human VEGF or anti-human VEGFR neutralizing antibody
CHEK-ATF045	HEK293	TSLPR (Luc) HEK293 Reporter Cell	Screen for anti-human TSLP or anti-human TSLPR neutralizing antibody
CJUR-STF046	Jurkat	NFAT (Luc) Jurkat Reporter Cell	Screen for T cell activators
CHEK-ATF047	HEK293	STAT3 (Luc) HEK293 Reporter Cell	Screen for STAT3 activators or inhibitors
CHEK-ATF048	HEK293	NF-κB (Luc) HEK293 Reporter Cell	Screen for NF-κB inhibitors and activators
CHEK-ATF049	HEK293	EGFR (Luc) HEK293 Reporter Cell	Screen for anti-human EGFR or anti-human EGF neutralizing antibody or small molecule inhibitor
CHEK-ATF050	HEK293	NFAT (Luc) HEK293 Reporter Cell	Screen NFAT activators or inhibitors

## ■ Other Recommended Products for Therapeutic Antibodies



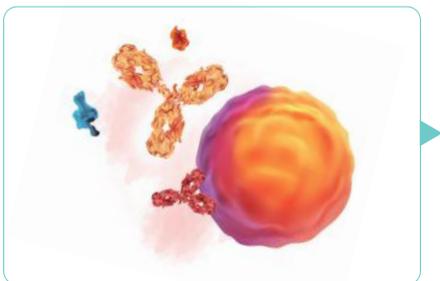
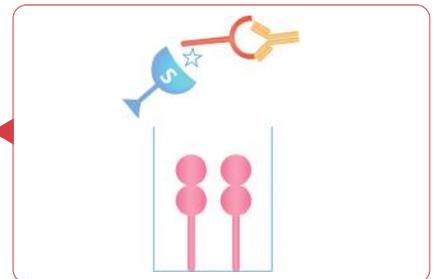
### Pre-Coupling Magnetic Beads

- Ready to use
- Minimal non-specific binding
- High-efficiency target capture

SARS-CoV-2 S1	CD3	BCMA
CD19	HER2	PSMA
SARS-CoV-2 RBD	CD33	ROR1
CD38	EpCAM	EGFR

### Inhibitor Screening Kits

- High Throughput
- High Specificity
- Easy Process



### ELISA Assay Kits for Quantitative Analysis of Therapeutic Antibodies in Serum Samples

PD-1	HER-2	CTLA-4
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- Low Background
- High Batch-to-Batch Consistency
- Application
- High Stability

# Solutions for Infectious Diseases Research



## COVID-19 Related Products

ACROBiosystems has been closely monitoring the development of the COVID-19 epidemic, aiming to support the development of vaccines, therapeutic antibodies and diagnostic reagents.

At present, a series of SARS-CoV-2 related products have been successfully developed covering almost all emerging mutants, including recombinant antigens, variant-specific and broad-spectrum antibodies, spike protein pseudoviruses, ELISA kits for antigen and antibody detection, pre-coupled magnetic beads, etc.

### Important Mutants

Omicron   BA.1/BA.1.1/BA.2/BA.3	"Delta/Delta+"   B.1.617.2	Alpha   B.1.1.7	Beta   B.1.351	Gamma   P.1
Mu   B.1.621	Lambda   C.37	Critical Spike Single Mutation	High Frequency Nucleocapsid Mutations	.....

### Core Tools for COVID-19 Related R&D

	Manufacture & Quality control	Pre-clinical research	Clinical Trial Phase
<b>Vaccine</b>	Antigen detection	<b>In vivo efficacy evaluation</b> Total antibody detection in animal model	<b>In vivo efficacy evaluation</b> Total antibody detection
	Affinity Detection	Neutralizing antibody detection in animal model	Neutralizing antibody detection
	Efficacy evaluation	<b>In vitro efficacy evaluation</b> Antigen detection	<b>In vitro efficacy evaluation</b> Antigen detection
			<b>Toxicity evaluation</b> ADE/VED detection
			Specific T cells and cytokines detection
<b>Therapeutic</b>	Immunity	<b>In vivo study</b>	PK/PD assay
	Screening		
	In vitro activity verification	PK/PD assay	

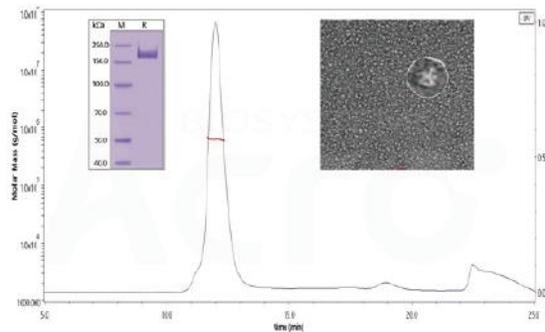
Diagnostic	Colloidal Gold	ELISA	ChemiLuminescence
	Antigen detection	Antigen detection	Antigen Detection (with Carboxy Magnetic Beads)
	IgG/IgM detection	IgG/IgM detection	Antigen Detection (with SA Magnetic Beads)
	Neutralizing antibody detection	Neutralizing antibody detection	Neutralizing antibody detection
	<ul style="list-style-type: none"> <li>Antibody pair (NUN-CH14 &amp; NUN-CH15)</li> <li>Nucleocapsid protein for quality control</li> </ul>	<ul style="list-style-type: none"> <li>Antibody pair (NUN-CH14&amp;NUN-CH15)</li> <li>Nucleocapsid protein for quality control</li> </ul>	<ul style="list-style-type: none"> <li>Antibody pair (NUN-S91 &amp; NUN-M224)</li> </ul>
	<ul style="list-style-type: none"> <li>Spike/ Nucleocapsid protein</li> <li>IgG/IgM antibody</li> </ul>	<ul style="list-style-type: none"> <li>Spike/ Nucleocapsid protein</li> <li>IgG/IgM antibody</li> </ul>	<ul style="list-style-type: none"> <li>Antibody pair (NUN-BM266&amp;NUN-M224)</li> </ul>
	<ul style="list-style-type: none"> <li>Spike RBD</li> <li>ACE2 and other host receptor</li> <li>Neutralizing antibody</li> </ul>	<ul style="list-style-type: none"> <li>Spike RBD</li> <li>ACE2 and other host receptor</li> <li>Neutralizing antibody</li> </ul>	<ul style="list-style-type: none"> <li>Spike/ Nucleocapsid protein</li> </ul>

## ► Featured Products and Assay Data

### Super stable SARS-CoV-2 spike trimer

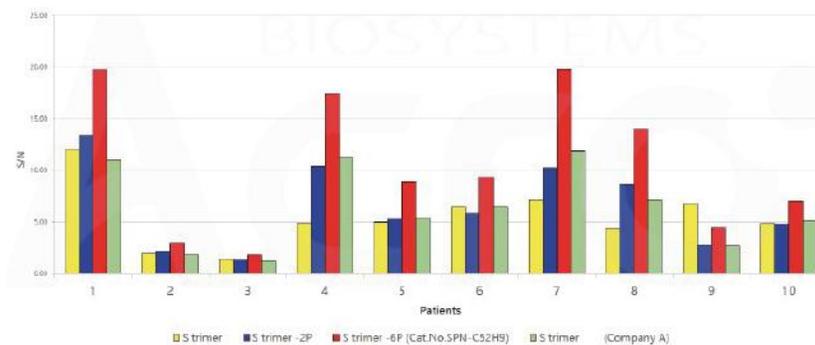
- Closely resemble the natural conformation: Introduction of 6P mutations on S2 stabilizes spike protein in the pre-fusion state.
- High trimer purity (>90%) verified by SDS-PAGE, SEC-MALS and Negative Stain Electron Microscopy (NS-EM).
- Provide trimer mutants of all VOCs, VOIs and other dominant strains.
- Suitable as control in antigen detection tests.

### >>> Structural identification data (SDS-PAGE & SEC-MALS & Negative Stain Electron Microscopy)



The purity of SARS-CoV-2 S protein, His Tag, Super stable trimer (Cat. No. [SPN-C52H9](#)) is more than 90% verified by SDS-PAGE under reducing (R) condition. The molecular weight was around 550-660 kDa confirmed by SEC-MALS. The particles are similar in size and appearance to SARS-CoV-2 trimers reported in published literature verified by negative stain electron microscopy.

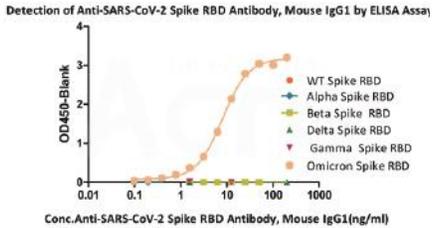
### >>> Active verification data



Different SARS-CoV-2 S proteins were used to detect the sera of recovered patients, among which SARS-CoV-2 S protein, His Tag, Super stable trimer (Cat. No. [SPN-C52H9](#)) had a high signal-to-noise ratio.

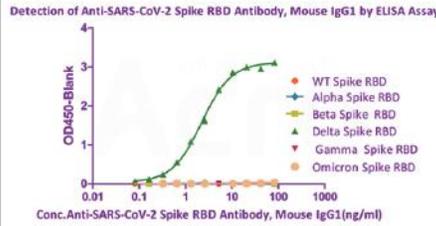
- Specific binding to the spike RBD of related mutant according to ELISA assay
- High bioactivity: the binding activity was verified by BLI/SPR
- High purity: the purity of antibody is more than 95% verified by SDS-PAGE and more than 90% verified by MALS
- Offer Mouse IgG1 and human-mouse chimeric mAb version

**Omicron Specific Antibody**



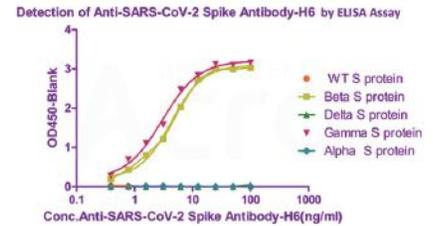
Immobilized SARS-CoV-2 Spike RBD (Omicron, Cat. No. [SPD-C522e](#)) can bind Anti-SARS-CoV-2 Spike RBD Antibody, Mouse IgG1 (Cat. No. [SPD-M305](#)) with a linear range of 0.4-12.5 ng/mL. The antibody does not bind Spike RBD of WT (Cat. No. [SPD-C52H1](#)), Alpha (Cat. No. [SPD-C52Hn](#)), Beta (Cat. No. [SPD-C52Hp](#)), Delta (Cat. No. [SPD-C52Hh](#)) and Gamma (Cat. No. [SPD-C52Hr](#)) (Routinely tested).

**Delta Specific Antibody**



Immobilized SARS-CoV-2 Spike RBD (Delta, Cat. No. [SPD-C52Hh](#)) can bind Anti-SARS-CoV-2 Spike RBD Antibody, Mouse IgG1 (Cat. No. [SPD-M110](#)) with a linear range of 0.1-3 ng/mL. The antibody does not bind Spike RBD of WT (Cat. No. [SPD-C52H1](#)), Alpha (Cat. No. [SPD-C52Hn](#)), Beta (Cat. No. [SPD-C52Hp](#)), Gamma (Cat. No. [SPD-C52Hr](#)) and Omicron (Cat. No. [SPD-C522e](#)) (QC tested).

**Beta&Gamma Specific Antibody**

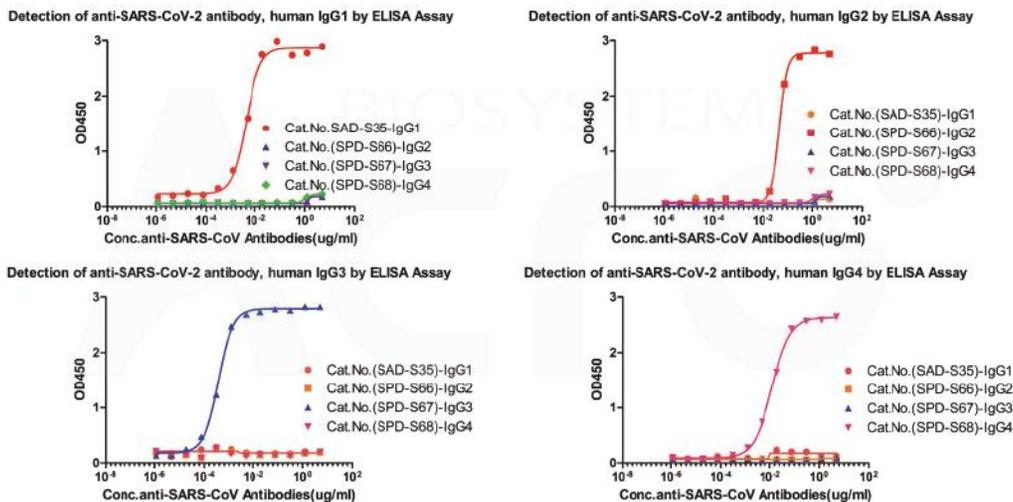


Immobilized SARS-CoV-2 spike protein (Beta, Cat. No. [SPN-C52Hk](#) and Gamma, Cat. No. [SPN-C52Hg](#)) can bind Anti-SARS-CoV-2 Spike Antibody-H6, Mouse IgG1 (AM416) with a linear range of 6-8 ng/mL. The antibody does not bind spike protein of WT (Cat. No. [SPN-C52H7](#)), Alpha (Cat. No. [SPN-C52H6](#)) and Delta (Cat. No. [SPN-C52He](#)) (QC tested).



ACROBiosystems can also provide mutant-specific antigen detection kits based on the sandwich ELISA, which are more convenient to use.

**>>> Convenient high-throughput IgG antibody subtype detection kit (indirect ELISA)**



Cross-validation data for antibody subtype detection

## ■ Other Virus Antigens

The outbreak of COVID-19 at the end of 2019 has brought incalculable and far-reaching global impact. In addition to the COVID-19, there are many other viruses widely spreading around the world, such as influenza virus, herpes virus and rabies virus, which endanger people's health and social security and affect economic development.

Based on the mature technology and experiences with the virus and vaccines accumulated from SARS-CoV-2, ACROBiosystems start working on core reagents for other viruses' vaccines R&D. Currently, our pipeline includes over 30 strains of more than 20 viruses expressed with different expression systems, such as Ebola virus, Herpes simplex virus, respiratory syncytial virus, rabies virus, etc. ACROBiosystems are still determined to facilitate the trial and application of the vaccines.

Ebolavirus	HIV	Influnza	Vaccinia virus	Zika
Nipah	Hendra	HRSV	HCMV	RABV
HSV	LCMV	HPV	VZV	EBV
HBV	HuNoV	TBEV	DENV	.....



## ■ Aneuro: Advance Neuroscience

As a protein supplier focusing on the field of pharmaceutical research and development, ACRO has a professional protein research and development platform, protein labeling platform, stable strain development platform and flow cytometry analysis platform. Aneuro is a new product line of ACRO that focuses and reflects dedicated efforts in neuroscience research. We aim to promote and facilitate neuroscience research by providing high-quality protein products and valuable new ideas.

Proteins for Therapy Research					
Alzheimer's Disease	Tau-441	TREM2	Apolipoprotein E	Amyloid Precursor Protein (APP)	
	AchE	BchE	BACE-1	GSK-3beta	
Parkinson's Disease	$\alpha$ -synuclein	MAOA	MAOB	DDC	LRRK2
Amyotrophic Lateral Sclerosis	SOD1		TDP-43		
Huntington Disease	Huntingtin (HTT)				
Multiple Sclerosis	CD19	CD20	CD52	ITGA4	IFNAR1
Brain Tumor	EGF and EGF R	VEGF and VEGF R	c-kit/CD117	G-CSF and G-CSF R	
	M-CSF and M-CSF R	GM-CSF and GM-CSF R alpha	TOP2A	PDGF and PDGF R	

Proteins for Diagnosis Research			
Amyloid Precursor Protein (APP)	Tau-441	$\alpha$ -synuclein	Glial Fibrillary Acidic Protein (GFAP)
Neurofilament Light (NfL)	Neurofilament Heavy (NfH)	S100B	Neuron-specific enolase (NSE)

**BIOSYSTEMS Acro**

Proteins for Neuroscience

# Aneuro

Advance Neuroscience Research

- Neurodegenerative diseases**
  - Alzheimer's disease
  - Parkinson's disease
  - Amyotrophic lateral sclerosis
  - Huntington's disease
- Structural brain diseases**
  - Brain tumors
  - Spinal muscular atrophy
- Neurovascular diseases**
  - Stroke
  - Subarachnoid hemorrhage
- Functional Neurological Disorders**
  - Epilepsy
  - Neuropathic pain
- Neuropsychiatric disorders**
  - Depression
  - Autism spectrum disorder
- Neuroinflammatory diseases**
  - Encephalitis
  - Meningitis



## ■ ELISA/MSD/SPR/BLI Analytical Service, Anti-Idiotypic Antibody Development Service, Pseudovirus Neutralization Assay Service

ACROBiosystems is a global brand focusing on protein technology, products and services in the development of biological drugs. It is our mission to provide a simpler and faster drug development process for customers. We have comprehensive target antigen product pipeline and analysis service platform. ACROBiosystems Analytical Center integrates multiple platforms such as SPR/BLI molecular interaction analysis testing, anti-idiotype antibody development, and pseudovirus neutralization assay services, bringing more value to customers with richer technical resources and customized services.

### SpectraMax i3x system



#### Enzyme-Linked Immunosorbent Assay (ELISA) Service

- ★ Comprehensive protein pipeline
- ★ Personalized solution design and report format

### QuickPlex SQ 120



#### Meso Scale Discovery Electrochemiluminescence (MSD) Service

- ★ Multiplexed and high throughput
- ★ High sensitivity, flexibility and precision

### Biacore 8K

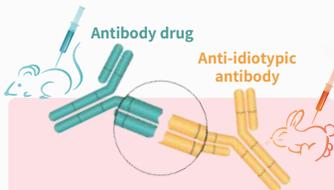


### ForteBio Octet 96e



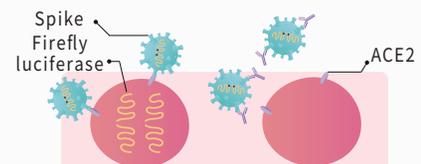
#### SPR/BLI analytical service

- ★ ACRO proteins supplied for free, only need provide your samples
- ★ Reports support IND requirements



#### Anti-Idiotypic Antibody Development Service

- ★ One-stop service from antigen preparation to test kit developments
- ★ Service for mAb, BsAb, ADC and CAR-T



#### Pseudovirus Neutralization Assay Service

- ★ High stability
- ★ High-quality detection model

Her2 BAFFR LAG-3  
 Fc Receptor Siglec-10  
 Biotinylated Protein  
 PD-L1 VEGF165 CD3 epsilon  
 ACE2 PD-1 BCMA  
 CD27 PVRIG  
 CD47 PSMA  
 FGL1 TFPI  
 Siglec-15 Integrin  
 CD24 S protein RBD Spike  
 S trimer FcRn PCSK9  
 CD3 epsilon Nucleocapsid  
 CAR-T Target Protein  
 Glypican 3 Integrin MICA PD-1  
 FcRn ADA Service CD30 MICA CD3E & CD3G  
 EGF R B7-H3 BCMA  
 Integrin TIGIT TGF-beta 1  
 Fc 4-1BB Siglec-15  
 Biotinylated Protein  
 CD20 CD200 GTR Nectin-4  
 VEGF165 CD73 FGLI  
 CD69 Nectin-4  
 VEGF165 PCSK9 IgG1 Fc CD40 Spike PD-L1  
 SIRP alpha ADA Service PSMA  
 Nectin-4 Biotinylated Protein CD3E & CD3D Immune Checkpoint Protein IL-2  
 SPR /BLI analytical service