

# Discovery Solutions for Cell and Gene Therapy

Early drug  
discovery

Manufacture/  
Quality control

Non-clinical  
studies

Clinical  
research

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.

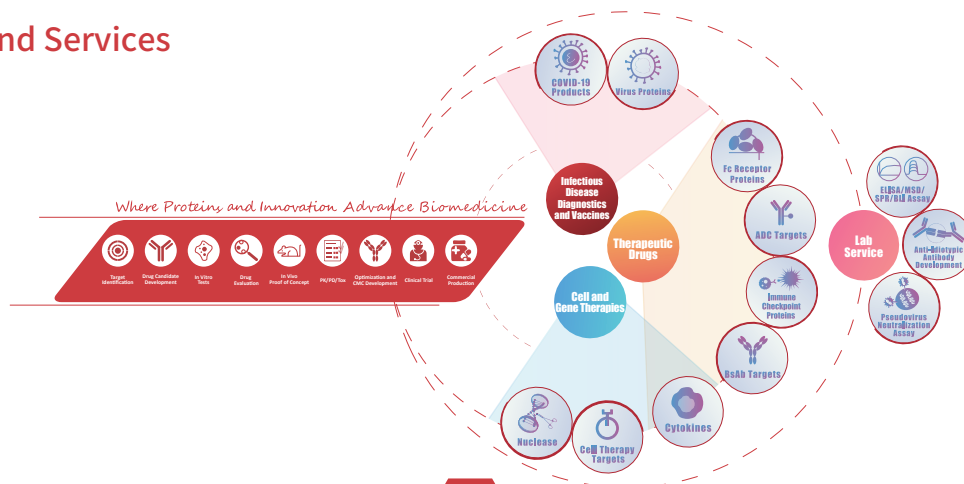
The company employs an application-oriented development strategy, with a particular focus on product design, quality control and solution-based support. The firm's products and services enable anyone in the field of drug development to have a more intuitive and streamlined process. The company is determined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



## Our Clients



## Products and Services



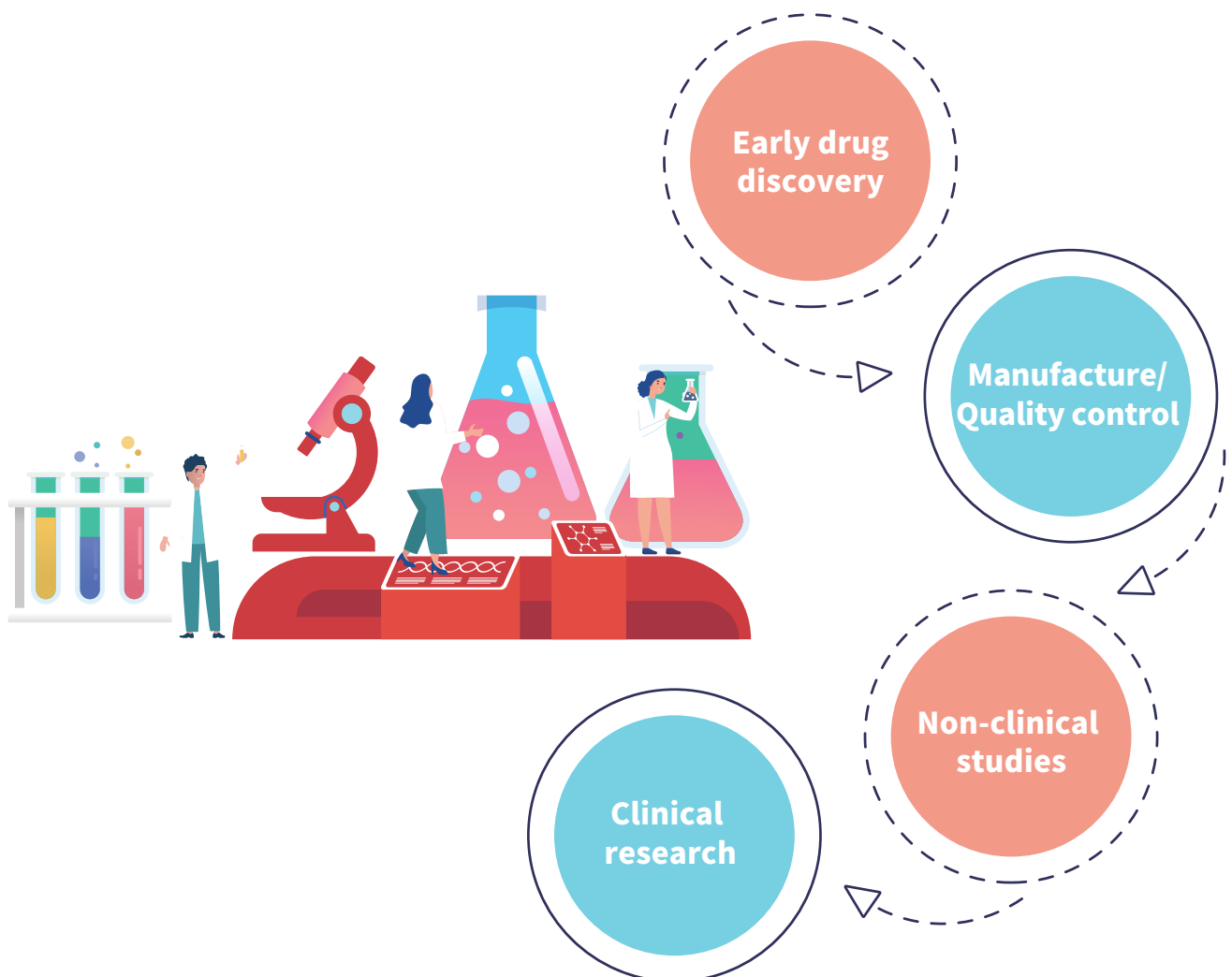
## Background



The pipeline of advanced therapy is expanding at a rate never seen before, with a number of cell and gene therapies (CGT) now reaching the market. Continuing advances in CGT are transforming how biopharma companies treat and potentially cure certain diseases.

Cell and gene therapies are the next wave of therapeutic innovation in the life sciences industry. However, the consequent challenges in development, manufacture, quality control, supply chain and commercial affect the whole industry.

As a leading manufacturer of recombinant proteins and other critical reagents to support the development of biomedicine, ACROBiosystems is proud to stand by you in the CGT journey. We employ an application-oriented development strategy, with a particular focus on product design, quality control and solution-based support to link each phase of your cell and gene therapy journey. Our products and services enable anyone in the field of drug development to have a more intuitive and streamlined process.





## Early drug discovery

### ▶ CAR-T targets

>>> Suitable for immunization, antibody screening and antibody affinity testing

- More than 50 targets for solid tumor and blood tumor
- PE/FITC/Biotin-labeled and unconjugated proteins are available
- Some products have completed the FDA DMF filing (DMF No.: 034936), which can support your IND, NDA, and BLA


### ▶ TCR-T targets

>>> Suitable for TCR testing and screening

- Monomer and tetramer are available for different applications
- High purity verified by SDS-PAGE; High affinity verified by SPR
- High stability and batch-to-batch consistency

### ▶ CRISPR-Cas nuclease

>>> Suitable for structure design and gene edition

- High enzyme activity: improve the cutting efficiency 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**

## Manufacture/Quality control

### ▶ GMP Grade Cytokines


>>> Suitable for cell culture and expansion

(research use and *ex vivo* cell culture processing only, and is not intended for human *in vivo* applications)

- Strict Quality Control Standards: 16 quality control standards and Excellent safety profile. 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, and facilities are available for online and on-site audits
- Accelerating Global Regulatory Approval of Biological Products: A comprehensive set of regulatory documents and validation reports are available by request. FDA DMF filing in progress


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

>>> Recommended for human T cell activation and 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 lyophilization
- RUO grade products can save the cost in early study  **GMP grade products are coming**

## ▶ GENIUS™ Nuclease

>>> Suitable for nucleic acid removing in Lentivirus purification process and AAV preparation process

- High purity verified by SDS-PAGE and HPLC(> 95%), high specific activity > 1.0 x 10<sup>6</sup> unit/mg
- Tag Free and close to the natural state, performs a high enzyme activity ≥ 250 U/μl
- No protease activity, high specificity and sensitivity
- Broader reaction conditions: Optimum temperature 35 °C -42 °C, optimum pH 8.0 - 8.5
- RUO grade products can save the cost in early study  **GMP grade products are coming**

## ▶ Star Staining New Generation Fluorescent-labeled Products

>>> One-step solution for CAR detection with higher specificity and less processing time, no secondary antibody and non-specific background

- More fluoresces are available: FITC\PE\APC\Alexa Fluor 488\555\647, etc
- More advanced technology: use new-generation site-specific labeling technology to maintain natural conformation and modification of the proteins
- More stringent quality control standard: High sensitivity and specificity verified by FACS, no non-specific binding to non-transduced PBMCs, high batch-to-batch consistency and stability that meet the requirements

\*Recommended: More pre-labeled proteins for different applications

## ▶ Cytokine ELISA Kits

>>> Suitable for the quantitative of cytokine in serum and cell matrix (RUO)

- Self-development based on ACRO' s protein production platform, performance and supply ability and quality assured
- High sensitivity, specificity and accuracy, strict method validation and quality control to ensure the within-run and between-run precision
- Easy to use and high throughput, at most 82 samples can be tested at one time in 2 hours





Pharmacokinetics  
(PK) research



Immunogenicity  
evaluation



Pharmacodynamic  
and safety studies

### ■ Pharmacokinetics (PK) research

#### ▶ CAR-T Targets

>>> Suitable for detecting CAR expression by flow cytometry in preclinical and clinical samples

- More than 50 targets for solid tumor and blood tumor
- PE/FITC/Biotin labeled proteins are available
- High stability and batch-to-batch consistency, performs well in flow cytometry in clinical trials
- No non-specific binding to non-transduced PBMCs
- Some products have completed the **FDA DMF filing** (DMF No.: 034936), which can support your IND, NDA, and BLA

#### ▶ TCR-T Targets

>>> Suitable for detecting TCR by flow cytometry in preclinical and clinical trials

- Monomer and tetramer are available for different application
- High purity verified by SDS-PAGE; High affinity verified by SPR
- High stability and batch-to-batch consistency

#### ▶ Anti-idiotypic Antibodies

>>> Suitable for CAR expression by flow cytometry in preclinical and clinical samples

- Featured anti-FMC63 antibody can specifically recognize the antigen-binding site of FMC63 derived CARs with high affinity
  - Suitable for detecting FMC63 derived anti-CD19 CARs in clinical trials
  - Overcome the challenges for complex cell components, low CAR-T cell concentration and non-specific background, etc
  - Fluorescent-labeled products are available for one-step detection, reducing process time
- ★ **Recommended production** [FM3-HPY53](#)、[FM3-FY45](#)、[FM3-BY54](#)

### ■ Immunogenicity evaluation

#### ▶ Anti-idiotypic Antibodies

>>> Suitable for detecting and characteristic of anti-drug antibodies

- Monoclonal anti-idiotypic antibody, polyclonal anti-idiotypic antibody are available
- Neutralizing antibodies, suitable for various ADA assay development (Direct\In-direct\Bridge ELISA, RIPA, SPR, Cell-based assay, Competitive Ligand Binding Assay)

ACRO provides cell therapy researchers with one-stop services from antigen preparation to polyclonal anti-idiotype antibody and immunogenicity test kit developments.

## ■ Pharmacodynamic and safety studies

### ▶ Cytokine ELISA Kits

>>> Suitable for the quantitative of cytokine in serum and cell matrix (RUO)

- Self-development based on ACRO's protein production platform, performance and supply ability and quality assured
- High sensitivity, specificity and accuracy, strict method validation and quality control to ensure the within-run and between-run precision
- Easy to use and high through put, at most 82 samples can be tested at one time in 2 hrs

## Product list

### ▶ GMP Grade Cytokines

Molecule	Cat.No.	Product Description
IL-15	GMP-L15H13	GMP Human IL-15
IL-7	GMP-L07H24	GMP Human IL-7 <i>Coming soon</i>
IL-21	GMP-L21H25	GMP Human IL-21 <i>Coming soon</i>

### ▶ Star Staining New Generation Fluorescent-labeled Products

Molecule	Cat.No.	Product Description
BCMA	BCA-HF2H3	FITC-Labeled Human BCMA / TNFRSF17 Protein, His Tag <i>Star Staining</i>
CD19	CD9-HF2H3	FITC-Labeled Human CD19 (20-291) Protein, His Tag <i>Star Staining</i>
Mesothelin	MSN-HF2H3	FITC-Labeled Human Mesothelin / MSLN (296-580) Protein, His Tag <i>Star Staining</i>
Siglec-2	SI2-HF2H4	FITC-Labeled Human Siglec-2 / CD22 Protein, His Tag <i>Star Staining</i>
FMC63	FM3-FY57P1	FITC-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) <i>Star Staining</i>
CD19	CD9-HP2H5	PE-Labeled Human CD19 (20-291) Protein, His Tag <i>Star Staining</i>
BCMA	BCA-HP2H7	PE-Labeled Human BCMA / TNFRSF17 Protein, His Tag <i>Star Staining</i>
Mesothelin	MSN-HP2H8	PE-Labeled Human Mesothelin / MSLN (296-580) Protein, His Tag <i>Star Staining</i>
CD19	CD9-HA2H9	APC-Labeled Human CD19 (20-291) Protein, His Tag <i>Star Staining</i>
BCMA	BCA-HA2H4	APC-Labeled Human BCMA / TNFRSF17 Protein, His Tag <i>Star Staining</i>
Mesothelin	MSN-HA2H6	APC-Labeled Human Mesothelin / MSLN (296-580) Protein, His Tag <i>Star Staining</i>

## ★ More Star Staining Products

### >>> FITC Label

Glypican 3	HER2	CD7	Siglec-3	CD30	EGF R
EGFRVIII	GUCY2C	NKG2D	FAP	Nectin-4	CD37
protein L					

### >>> PE Label

Glypican 3	NKG2D	FAP	Nectin-4	CD37	protein L
CD147	CD300e	HER2	Siglec-2	Siglec-3	PD-1
OX40	MUC-1	TSLP R			

### >>> APC Label

Glypican 3	CD147	CD300e	HER2	Siglec-2	Siglec-3
PD-1	OX40	MUC-1	TSLP R		

### >>> Alexa Fluor 647 Label

BCMA	CD19	Mesothelin	Glypican 3	CD147	CD300e
HER2	Siglec-2	Siglec-3	PD-1	OX40	MUC-1
TSLP R					

### >>> Alexa Fluor 555 Label

BCMA	CD19	Mesothelin	Glypican 3	NKG2D	FAP
Nectin-4	CD37	protein L			

### >>> Alexa Fluor 488 Label

BCMA	CD19	Mesothelin	Glypican 3	CD147	CD300e
HER2	Siglec-2	Siglec-3	PD-1	OX40	MUC-1
TSLP R					

## ► Targets for Cell Therapy

### >>> Blood tumor

BCMA	CD19	CD123	CD138	CD20	CD22
CD30	CD33	CD37	CD38	CD4	CD5
CD56	CD7	CD72	CD99	CLL-1	CS1
GPRC5D	LILRB4	CD123	CD138	CD20	CD22

### >>> Solid tumor

VEGF R2	uPAR	ROR1	PSMA	PSCA	NKG2D
Nectin-4	MUC16	MUC1	MSLN	IL13RA2	HGF R
HER3	HER2	GUCY2C	GPC3	FOLR1	FAP
EpCAM	EGFRVIII	EGFR	EBV	DLL3	CLDN18
CEA	CD70	CD47	CD147	CD133	CAIX
B7-H3					

### >>> TCR-T Targets

NY-ESO-1
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## ► Anti-idiotypic Antibodies

Cat.No.	Species	Product Description	Application
FM3-Y45	Mouse	Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) DMF Filed	CAR expression by flow cytometry in preclinical and clinical samples
FM3-FY45	Mouse	FITC-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) DMF Filed	
FM3-BY45	Mouse	Biotinylated Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) DMF Filed	
FM3-Y45P1	Mouse	Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (HEK293) DMF Filed	
FM3-HPY53	Mouse	PE-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (Site-specific conjugation) DMF Filed	
FM3-BY54	Mouse	Biotinylated Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1, Avitag™ (Y45) DMF Filed	
FM3-FY45P1	Mouse	FITC-Labeled Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (HEK293)	
FM3-Y45A1	Mouse	Monoclonal Anti-FMC63 scFv Antibody, Mouse IgG1 (Y45) (Carrier-free) (recommended for ADA assay) DMF Filed	ADA assay development
FM3-S93	Rabbit	Rabbit Anti-Mouse FMC63 scFv Polyclonal Antibody (recommended for ADA assay) (MALS verified)	

## ► Magnetic Beads

Cat.No.	Product Description	Application
MBS-C001	Anti-CD3/CD28 Antibody-coupled Magnetic Beads	Cell activation and expansion

## ► Nucleases

Molecule	Cat.No.	Product Description
Cas9	CA9-S5149	NLS-Cas9 Nuclease
Cas12a	CAA-L5149	NLS-Cas12a Nuclease
BenzNuclease	BEE-N3116	GENIUS™ Nuclease DMF Filed

## ► Cytokine ELISA Kits

Molecule	Cat.No.	Product Description
IFN-γ	CRS-A001	Human Interferon-γ(IFN-γ) ELISA Kit
TNF-α	CRS-A002	Human Tumor Necrosis Factor Alpha(TNF-α) ELISA Kit <i>coming soon</i>
IL-2	CRS-A003	Human Interleukin-2(IL-2) ELISA Kit <i>coming soon</i>
IL-4	CRS-A004	Human Interleukin-4(IL-4) ELISA Kit <i>coming soon</i>
IL-6	CRS-A005	Human Interleukin-6(IL-6) ELISA Kit <i>coming soon</i>
IL-7	CRS-A006	Human Interleukin-7(IL-7) ELISA Kit <i>coming soon</i>
IL-8	CRS-A007	Human Interleukin-8(IL-8) ELISA Kit <i>coming soon</i>
IL-10	CRS-A008	Human Interleukin-10(IL-10) ELISA Kit <i>coming soon</i>
IL-15	CRS-A009	Human Interleukin-15(IL-15) ELISA Kit <i>coming soon</i>
IL-21	CRS-A010	Human Interleukin-21(IL-21) ELISA Kit <i>coming soon</i>
IL-12 p70	CRS-A011	Human Interleukin-12p70(IL-12p70) ELISA Kit <i>coming soon</i>
IL-1 beta	CRS-A012	Human Interleukin-1beta(IL-1beta) ELISA Kit <i>coming soon</i>
GM-CSF	CRS-A013	Human Macrophage Colony Stimulating Factor 2(GM-CSF) ELISA Kit <i>coming soon</i>

**Her2 BAFFR LAG-3**  
**Fc Receptor Siglec-10**  
**Biotinylated Protein**  
 PD-L1 VEGF165 CD3 epsilon  
**CD20 PD-1 BCMA**  
**CD27 PVRIG**  
**CD47 PSMA**  
**CFGL1 TFPI**  
**Siglec-15 Integrin**  
**CD24 CD3E & CD3D CD20**  
**CD19 FcRn PCSK9**  
**IL-2 R alpha**  
**CAR-T Target Protein**  
**Glypican 3 Integrin MICA PD**  
**FCRn ADA Service CD30 MICA CD3E & CD3G**  
**EGF R B7-H3 BCMA**  
**Integrin TIGIT TGF-beta 1**  
**4-1BB Siglec-15**  
**Biotinylated Protein**  
**CD20 CD200 GITR Nectin-4**  
**VEGF165 CD73 FGLI**  
**CD69 Nectin-4**  
**VEGF165 PCSK9 IgG1 Fc CD40 BCMA PD-L1 PSMA**  
**SIRP alpha ADA Service IL-2**  
**Nectin-4 Biotinylated Protein CD3E & CD3D Immune Checkpoint Protein**  
**SPR /BLI analytical service**



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