

# Company Overview

Expertly Designing & Manufacturing Recombinant Proteins & Enzymes



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### **Our Mission**

Deliver reliable recombinant proteins and enzymes with a commitment to quality, speed, and innovation.



We build our catalog on the most relevant drug discovery targets and proteins for today's leading research. Our catalog features over 3000 off-the-shelf recombinant proteins and enzymes, encompassing a wide array of targets, species, tags, and labels to support diverse applications.

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### **Custom Solutions**

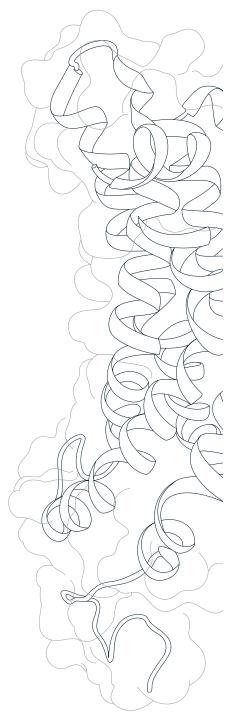
We produce high-quality proteins and enzymes customized for your research. For specialized projects, we handle complex expressions like soluble TCRs, MHCs, and transmembrane proteins.

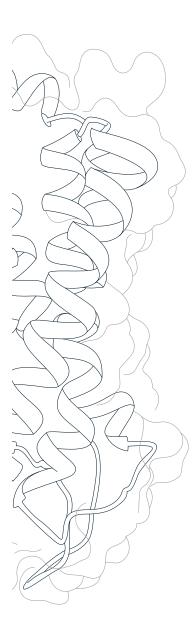
### ွိိ Purity & Bioactivity Testing

Our in-house R&D and production teams oversee every aspect of protein design, expression, and quality testing. We perform rigorous QC testing for bioactivity via SPR, ELISA, and BLI, and for purity using SEC-HPLC and PAGE. This ensures that you receive reliable, high-quality proteins and enzymes with consistent performance.

### Fast, Reliable Service

Our commitment to fast, reliable service means your research can proceed without delays. We offer an extensive selection of off-the-shelf products, available with next-day overnight shipping to the U.S and 2-4 day international shipping. For custom orders, we deliver standard projects in just 6-8 weeks.





### 3000+ Recombinant Protein Catalog

A comprehensive catalog for diverse applications in drug development



### Immune Checkpoint Proteins

PD-L1 CTLA-4 PD-1 OX40 B7-H3 CD161 LAG-3

# CD3 Proteins

CD3ε CD3γ CD3δ CD3ε/CD3δ CD3ε/CD3γ



FcγRI FcεRI FcγRII FcεRII FcγRIII FcRn FcγRIIV IgG4 Fc **}** 

### **CAR-T** Targets

CD19 BCMA MSLN CD27 Her2 CD22 LILRB2 CD123



### Cadherins

E-Cadherin CDH10 N-Cadherin CDH16 CDH3 CDH11 CDH6 CDH17



### Featured Products & Services

### Specialized Solutions for Modern Therapeutics



### **Catalog Membrane Proteins**

- MRGPRGX2 
   Claudin 9
- CCR8
- Claudin 6 • CD24
- GPRC5D
- - ∘ & more!

- Displayed on virus-like particles (VLPs) or copolymer nanodiscs
- Full-length multi-pass transmembrane proteins
- Mammalian-expression
- Soluble proteins
- Native conformation

### **Custom Membrane Protein:**

- GPCR
- Ion Channel
- 4HB/Tetraspanin
- Solute Carrier
- Claudin



### **Catalog Alleles:**

- HLA-A\*01:01
- · HLA-A\*02:01
- HLA-A\*02:03
- HLA-A\*03:01
- HLA-A\*11:01
- HLA-A\*24:02
- & more!

### Custom MHC:

- Monomer or Tetramer
- Class I or Class II Allele
- Biotinylation or Fluorescent-Labeling
- Mammalian or E. coli expression

Class I & Class II

- Monomers & Tetramers
- Biotinylated & Fluorescent MHC-peptide COMPLEXES

### **Catalog Antigens:**

- AFP (FMNKFIYEI)
- KRAS G12D (GADGVGKSAL)
- MAGE-A3 (EVDPIGHLY)
- MART-1 (ELAGIGILTV)
- NY-ESO-1 (SLLMWITQC)
- p53-R175H (HMTEVVRHC) & more!

### Custom Soluble TCR Expression:

- Soluble expression of TCRs including scFv-TCR, TCR-His, etc.
- TCR engineering to optimize soluble TCR expression based on TCR modeling
- SPR or ELISA analysis of soluble TCR & MHC interactions





### AAV Titration ELISA Kits

Quantify full and empty, intact AAV capsids with specificity to individual serotypes

Catalog No. AAV2: AV2-MM00B AAV5: AV5-MM00B AAV6: AV6-MM00B AAV8: AV8-MM00B

### Universal Cas9 Protein ELISA Kit

Quantify residual Cas9 protein via sandwich ELISA with high sensitivity

Catalog No. CAS-MM00B

# Research-Grade & GMP-Grade Cytokines

Small-tag or tag-free cytokines with cellular-level bioactivity verification and low internal toxicity

GMP IL-15: GMP-CKS-HE015 GMP IL-7: GMP-CKS-HE007



### CRISPR spCas9 Nuclease

High editing efficiency off-the-shelf Cas9 protein for large-scale gene editing

Catalog No. GMP-CAS-EE109

### MaxPure<sup>™</sup> T7 RNA Polymerase

Engineered T7RNAP designed to minimize dsRNA byproduct during IVT

Catalog No. GMP-T7P-EE1MP

### AccuBase® Cytosine Base Editor

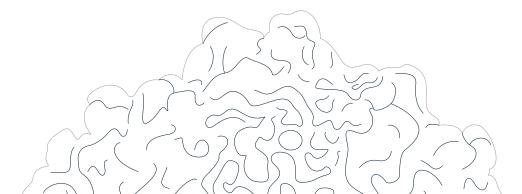
Engineered base editor with near-zero off-target effects

Catalog No. GMP-KD-0001

### MaxNuclease<sup>™</sup>, Nonspecific Endonuclease

Degrade all DNA and RNA for biologics manufacturing

Catalog No. GMP-NUC-SE101



### SAMS<sup>™</sup>: Structure-Aided Multiplex Screening

A multi-faceted rational approach to protein engineering.

# Structure-Aided



- Codon optimization
  Optimized leader sequence.
- 3D Structure Modeling • Crystallography
- Steric hindrance

# **Multiplex Screening**

# Optimal Purification Methods

- Optimization of wash and elution buffer
- Protein concentration, Salt, Temperature, pH, Ionic Strength, Detergents

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### Expression Conditions

- High-quality DNA
- Optimized culture medium
- Proprietary transient transfection reagents
- Induction conditions, culture temperature, agitation, & oxygen

## Host Cell Selection

- HEK293
- E.Coli
- CHO
- Yeast
- Baculovirus-Insect Cell

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### Storage Conditions

- Optimization of protein concentration
- Lyophilization soon after production
- Post-lyophilization activity testing

# **Custom Protein Production**

Complete expertise in construct design, expression characterization, and structure optimization



6-8 Weeks Turnaround Time



Proteins from Multiple Species



**Complex Proteins** 



# **Off-the-Shelf GMP-Grade Products**

Catalog #	Product	Application
GMP-CAS-EE109	CRISPR Cas9 Protein	Gene Editing
GMP-KD-0001	AccuBase <sup>®</sup> Cytosine Base Editor	Gene Editing
GMP-NUC-SE101	MaxNuclease™, Endonuclease	DNA/RNA Degradation
GMP-T7P-EE1MP	MaxPure <sup>™</sup> T7 RNA Polymerase	mRNA Production
GMP-T7P-EE101	T7 RNA Polymerase	mRNA Production
GMP-RNI-ME101	Murine RNase Inhibitor	mRNA Production
GMP-MEH-VE101	mRNA Cap 2'-O-Methyltransferase	mRNA Production
GMP-PYR-YE101	Pyrophosphatase, Inorganic	mRNA Production
GMP-DNI-EE001	DNase I, RNase-free	mRNA Production
GMP-VCS-VE101	Vaccinia Capping Enzyme	mRNA Production
GMP-BSA-EE101	Bsal	mRNA Production
GMP-CKS-HE015	GMP Human IL-15	Cell Culture
GMP-CKS-HE007	GMP Human IL-7	Cell Culture

# Customizable GMP **Documentation Package**

- Datasheet
- Melamine Statement
- CoA
- TSE/BSE Statement
- CoO
- MSDS
- Nitrosamine Statement
- DMF Filing

# **Seamless Transition** from Research to GMP

Utilize our affordable research-grade enzymes during preclinical stages to simplify your process development efforts. With the same purity and performance as GMP-Grade, you will be able to seamlessly transition to clinical manufacturing, while ensuring stability, safety, potency, and purity in your final biologics.





ISO13485 Certified

FDA Drug Master **File Certifications** 

- Stability Testing
- Quality Management System
- Process & Analytical Method Optimization
- Documentation System



## Our story How did we get here

#### KACTUS is Founded

KACTUS embarked on its journey to deliver innovative recombinant proteins solutions, addressing the unmet demands of researchers and the challenges posed by complex protein expression.

#### SAMS<sup>™</sup> Technology Platform

After successfully expressing complex proteins including MHCs and transmembrane proteins, we conceptualized our structure-based protein expression platform, Structure-Aided Multiplex Screening (SAMS™).

#### GMP Auditing & DMF Submissions

We passed onsite audits for our GMP-compliant facilities by gene editing and mRNA vaccine clients. In alignment with our commitment to regulatory adherence, we filed Drug Master Files (DMF) for our key GMP enzyme products.

#### GMP Enzyme in Clinical Trial

Our GMP-Grade CRISPR Cas9 Enzyme was approved for use in a clinical trial to treat beta-thalassemia, standing as a testament to the credibility of our GMP production facilities and regulatory support.

#### Expanding Membrane Proteins

We expanded our transmembrane protein display platforms to include nanodiscs, allowing our customers to better overcome membrane protein display challenges. JUI

#### First to Express Claudin 18.2

We became the first company to successfully express full-length mutli-pass transmembrane protein Claudin 18.2. This showcased the robustness of our protein engineering capabilities.

#### Established GMP Enzyme Enterprise

We established our cGMP-compliant enzyme manufacturing facility in 2021, underscoring our commitment to commercialization solutions. This facility provide a range of GMP-Grade mRNA and gene editing enzymes.

FEB 2022

DEC 2022

JUL 2024

#### Making Products Accessible

Our global operational footprint was expanded to include additional warehouse sites, international distributors, ready-to-ship products, and fast shipping speeds. Quality customer service is at the forefront of our logistics operations.

#### First Commercial Base Editor

KACTUS proudly announced the global release of AccuBase<sup>®</sup>, the first commercially-available base editor, revolutionizing precision gene editing with unparalleled accuracy and efficiency.

#### Fueled by Purpose

Today, our solutions have expanded to 3000+ recombinant proteins, 25+ GMP enzymes, and custom protein expression. We continue to launch new products and services that focus on current challenges in R&D and commercialization.

### **Contact Us**

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