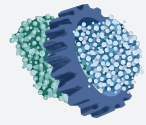
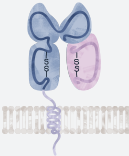


## What products do we specialize in?



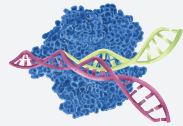
### Recombinant Proteins

- VLP-Displayed Antigens
- Claudin 18.2 & Claudin 6
- CD3 Heterodimers
- CCR8, GPRC5D, CD24
- Laminin 521



### MHC Products

- Monomers/Tetramers
- Biotinylated
- Fluorescent
- MHC Virus-like Particles
- Peptide-Ready MHC



### Gene Editing Enzymes & Kits

- AAV ELISA Kits
- MaxNuclease & ELISA
- Cas9 & ELISA
- Cas12a



### RNA & DNA Enzymes

- T7 RNA Polymerase
- Restriction Endonucleases (BsaI, BspQI)
- T4 RNA Ligase I/II
- RNase R
- TelN Protelomerase

Learn more and browse our product selection:



Find us in person!



60 Hickory Drive,  
Waltham MA 02451,  
United States

## Custom Protein Production

We specialize in providing contract research services and comprehensive large-scale contract manufacturing solutions tailored to protein engineering, expression, and production requirements for custom recombinant proteins.

Leveraging our extensive expertise in the realm of recombinant protein production, coupled with the utilization of our proprietary SAMS™ platform, we optimize protein configuration, precisely tune expression conditions, and ensure high bioactivity and purity for your product.

Contact a team member at [sales@kactusbio.us](mailto:sales@kactusbio.us) to request a custom project.

## GMP-Grade Production

- 5000m<sup>2</sup> R&D, Production, Quality Control Center
- 10000m<sup>2</sup> GMP-Grade Manufacturing Site
- 1000L Fermentor for Production of GMP-Grade Proteins
- 85% Employees in R&D and Quality Control



### Customizable GMP Documentation Package

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



ISO13485  
Certified



FDA Drug Master  
File Certifications

### 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.

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

GMP-Grade  
Production:



# Company Overview

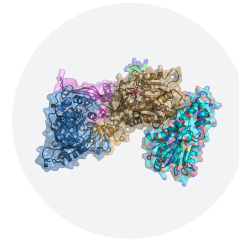
OUR STORY

## How did we get here?

<p><b>Founded</b> <b>MAR 2018</b></p> <p>Established in 2018, KACTUS embarked on its journey with a resolute mission: to deliver innovative solutions to the realm of recombinant proteins, squarely addressing the unmet demands of researchers and the challenges posed by intricate protein expression.</p> <p><u>6 people</u></p>	<p><b>JUL 2018</b> <b>First Company to Express Claudin 18.2</b></p> <p>Our esteemed scientific team achieved a remarkable breakthrough by becoming the first to successfully express the intricate multi-transmembrane protein Claudin 18.2. This achievement showcased the robust capabilities of our protein engineering capabilities.</p>
<p><b>2019</b> <b>SAMS Technology Platform</b> <i>Finished Pre-A round fundraising.</i></p> <p>Having diligently pursued the recombinant expression of numerous proteins including MHCs and transmembrane proteins, our endeavors culminated in the conceptualization of our pioneering protein technology platform, aptly named Structure-Aided Multiplex Screening (SAMS).</p>	<p><b>2020</b> <b>Established GMP Enzyme Enterprise</b> <i>Finished A round fundraising.</i></p> <p>In a significant stride forward, our transformation into a cGMP enzyme manufacturing facility in 2021 underscored our substantial commitment to commercialization solutions, enabling us to provide an extensive range of GMP-Grade mRNA and gene therapy enzymes.</p> <p><u>50 people</u></p>
<p><b>2021</b> <b>Onsite GMP Auditing &amp; DMF Submissions</b> <i>Finished A+ round fundraising.</i></p> <p>We achieved a significant milestone by passing onsite audits for our GMP-compliant facilities by esteemed clients in the gene therapy and mRNA vaccine sectors. In alignment with our commitment to regulatory adherence and product quality, we took a proactive step by filing Drug Master Files (DMF) for our key GMP enzyme products. This initiative also underscored our unwavering focus on maintaining the highest standards of quality assurance.</p> <p><u>120 people</u></p>	<p><b>FEB 2022</b> <b>Making Products Accessible</b></p> <p>In our quest to enhance accessibility to our products, we emphasized a global operational footprint, with international distributors, ready-to-ship products, and fast shipping speeds. Quality customer service is at the forefront of our logistics operations.</p>
<p><b>TODAY</b> <b>Fueled by Purpose</b></p> <p>Today, our solutions have expanded to include 2500+ recombinant proteins, 25+ GMP enzymes, and custom protein expression. We continue to launch new products and services to facilitate novel drug development, focusing on current challenges in R&amp;D and commercialization.</p> <p><u>230 people &amp; counting</u></p>	<p><b>DEC 2022</b> <b>GMP Enzyme Approved for Clinical Trial</b> <i>Finished B round fundraising.</i></p> <p>Our GMP-Grade CRISPR Cas9 Enzyme was not only approved for use in Reforgene Medicine's Clinical Trial to treat beta-thalassemia but also stands as a testament to the authenticity and credibility of our state-of-the-art production facilities and comprehensive regulatory support.</p>

OUR MISSION

## Why are we here?



Provide first-to-market recombinant protein and enzymes to accelerate novel biopharma and diagnostic breakthroughs.

OUR DIFFERENTIATORS

## What makes us unique?



### Catalog & Custom Services

Within our comprehensive catalog, you'll find an array of over 2500 ready-made recombinant proteins, encompassing diverse targets, species, tags, and labels. Each catalog product is thoughtfully curated, driven by stringent criteria of product quality and the specific demands of researchers. Recognizing the dynamic nature of the drug development industry, we also offer custom protein design and production services to meet your unique requirements.



### Tailored Expression Systems

Following the creation of precise 3D models of your protein or enzyme, we subject these configurations to a battery of tests across diverse expression systems. This systematic approach is geared towards refining protein folding dynamics, optimizing bioactivity levels, and fortifying overall stability, resulting in an elevated performance profile.



### Design Expertise

Drawing upon our established proficiency in protein and enzyme design, in conjunction with our innovative SAMS™ protein engineering platform, we are well-equipped to collaborate with you in developing a functional protein configuration tailored to your unique needs. This collaborative effort aims to optimize activity, purity, and yield, ensuring an affordable and effective outcome for your application.



### Quality Bulk Supply

From the initial benchwork to the final stages of large-scale production, we offer a range of quantities and will orchestrate a seamless transition from small to large-scale for your protein configuration. Our meticulous quality control systems safeguard batch-to-batch uniformity, while our facilities are primed to accommodate sustained high-volume production, ensuring dependable and unwavering output.

VLP- Displayed Antigens

MHC Monomers & Tetramers

Laminin 521

CD3 Proteins

GMP MaxNuclease

GMP Cas9 & Cas12a

GMP mRNA Enzymes

AAV ELISA Kits

## SAMS: Structure-Aided Multiplex Screening

A multi-faceted rational approach to protein engineering.

### Structure-Aided



#### Sequence Analysis

- Codon optimization
- Optimized leader sequence.



#### Literature Analysis

- Cotransfection with chaperon or protein partners
- Best host cell



#### 3D Structure Modeling

- Crystallography
- Steric hindrance

### Multiplex Screening



#### Host Cell Selection

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



#### Proprietary Purification Methods

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



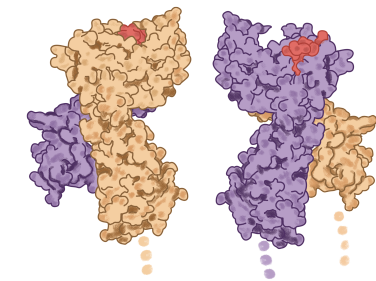
#### Expression Conditions

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



#### Storage Conditions

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



SAMS Protein Engineering Platform:

