



ANTIBODY DISCOVERY

AND DEVELOPMENT

CUSTOM & INNOVATIVE

SERVICES & PRODUCTS

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- Premade Antibody & Peptide Libraries
- Recombinant Antibodies
- Antibody-Drug Conjugates (ADCs)
- Bispecific Antibodies

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PART 1

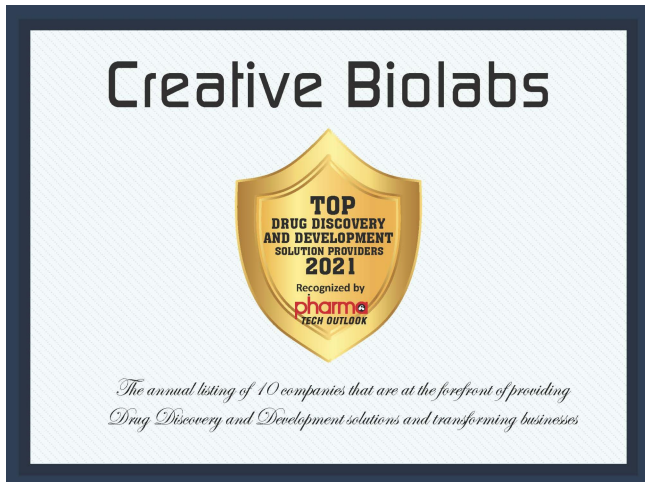
ABOUT
**CREATIVE
BIOLABS**



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INTRODUCTION

Founded in 2004, Creative Biolabs is now a leader in the service provider industry. Creative Biolabs' exceptional capacity to undertake clients' projects according to their specific demands in quality, timeline and budget helps supporting researchers across different therapeutic areas. Creative Biolabs provides professional custom services to meet our clients' specific needs in their drug development journey. Our expertise includes various antibody related modalities, covering but not limited to monoclonal antibody, single domain antibody, bispecific antibody, multi-specific antibody, ADC, and CAR T. Creative Biolabs has multiple well-established platforms and keeps evolving with the cutting-edge technology of scientific and technological development. We can thereby provide the most suitable approach to our clients' projects. Our continued success relies upon clear, open, and regular communication with customers paired with our in-depth scientific knowledge.



Expert In Drug Discovery and Development Solution.

OUR VALUE

Creative Biolabs is dedicated to providing professional services to help our customers effectively convert today's innovation to tomorrow's life-saving therapies. In addition to positioning ourselves as a CRO company, we work collaboratively with our clients to troubleshoot and improve the success rate of any project. Creative Biolabs is dedicated to helping scientists to do their research at a faster speed in a more cost-effective way.

Everything for Our Customers

Your success is our goal. *Creative Biolabs* always puts customers first in everything. That is why we devote ourselves to expanding antibody discovery and developing services and products, as well as to finding the best customized solution for each project.

Strive for Excellence

Highest Quality Services

Equipped with cutting-edge technologies and highly talented teams, *Creative Biolabs* is here to offer multiple channels and trusted information, thus helping you making clear and confident decisions.

Highest Quality Products

Creative Biolabs is committed to providing clients with the highest quality products to meet their research requirements. We continuously work toward delivering the most comprehensive data and highest quality products for our customers.

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PART 2

FEATURED SERVICES

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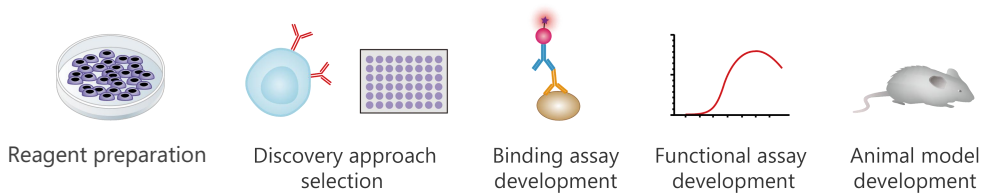
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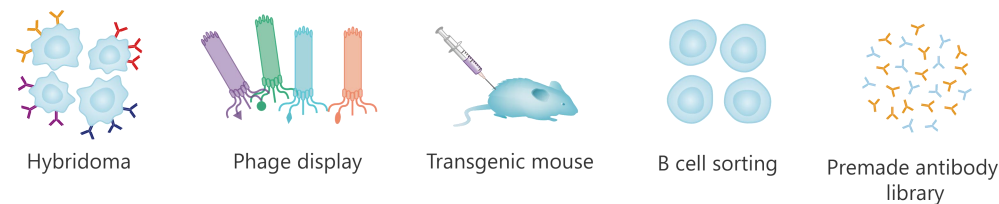
Antibody Discovery and Development Process

Encompassing all stages of biotech and biopharmaceutical projects, Creative Biolabs offers a wide range of products and services that span the entire project design and execution of antibody discovery and development. Our antibody discovery and development processes include but not are limited to:

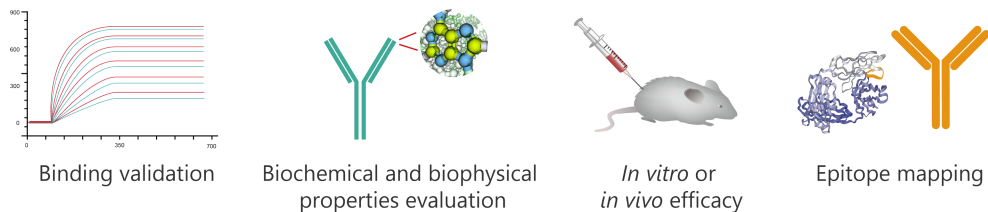
1 Assay development



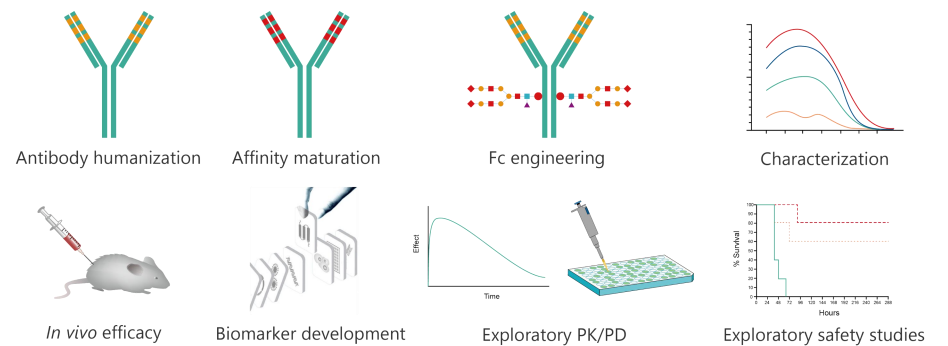
2 Hit generation



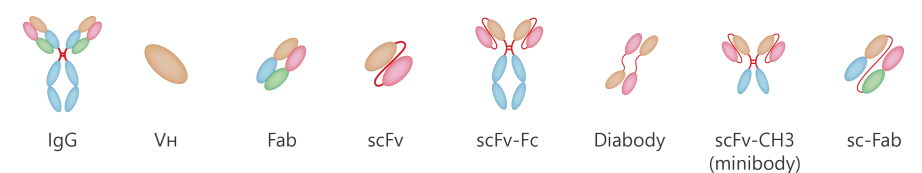
3 Lead selection



4 Lead optimization and characterization



5 Antibody production



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2.1 Antibody Discovery Services

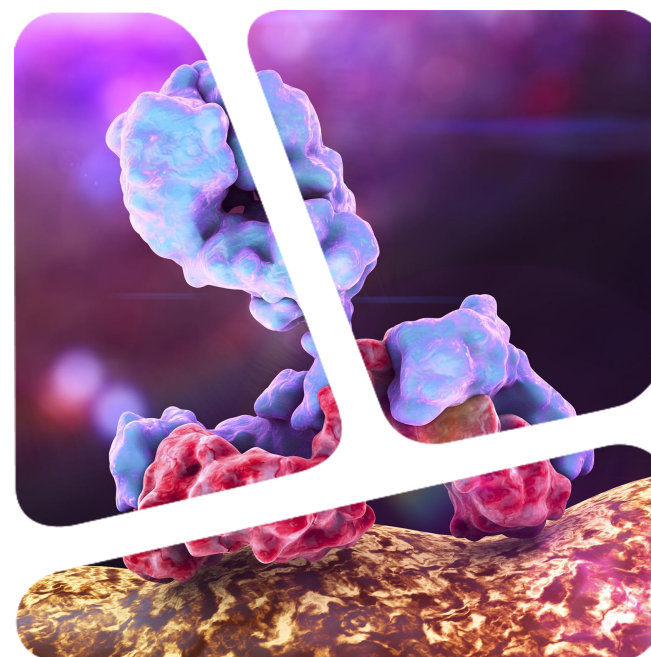
Creative Biolabs is a leading service provider that focuses on the development of high-specificity and high-affinity monoclonal antibodies for research, diagnostic, and therapeutic applications. Our service packages include but are not limited to:

- 1 Phage Display & Antibody Library Service
- 2 Hybridoma Service
- 3 Single Domain Antibody (sdAb) Service
- 4 Magic™ Membrane Protein Antibody Discovery Service
- 5 Native™ Antibody Discovery Service
- 6 *In Vitro* Diagnostics (IVDs) Antibody Discovery Service



CREATIVE BIOLABS

Quality / Experience / Dedication



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2.1.1 Phage Display & Antibody Library Services

Creative Biolabs is a leading expert in advanced phage display technologies for a broad range of antibody discovery projects. With years of experience, our scientists offer high-quality phage display library construction and custom phage display library screening services to meet our clients' unique demands.

Featured Services

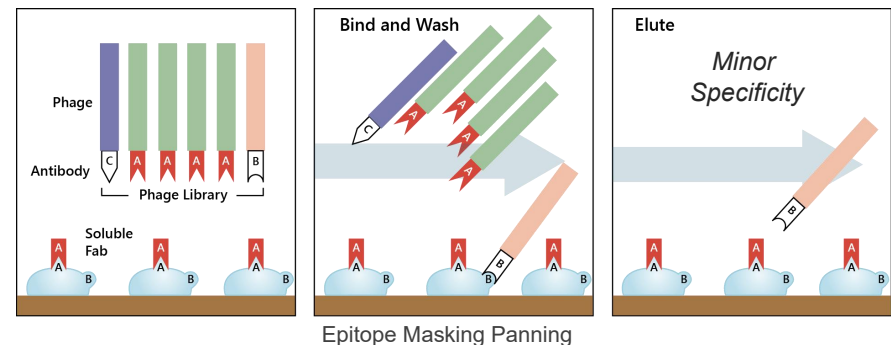
- Premade Antibody Library Screening
- Immune Phage Display Antibody Library Construction and Screening
- Single Domain Antibody (SdAb) Development
- Phage Display Peptide Library Construction and Screening (Trimer codon/NNK)
- cDNA Phage Display Library Construction and Screening

Various Biopanning Methods

- A. Solution-Sorting Screening Strategy
- B. Cell-Based Screening Strategy
- C. *In Vivo* Screening Strategy
- D. Epitope Masking Strategy
- E. Subtractive Selection Strategy

Key Advantages

- Different Antibody Formats and Display Types
- Large Library Capacity: From 10^7 to Over 10^{11}
- High Affinity: From 10^{-7} to 10^{-9} M
- Various Phage Display Systems (M13, T7, and λ)
- Tailored Biopanning Strategies
- Comprehensive QC Validation
- Various Species
- High-Quality Pre-Made Libraries
- Phage Display Antibody Library Construction



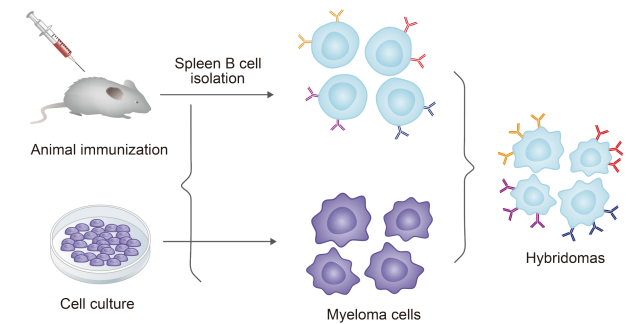
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2.1.2 Hybridoma Services

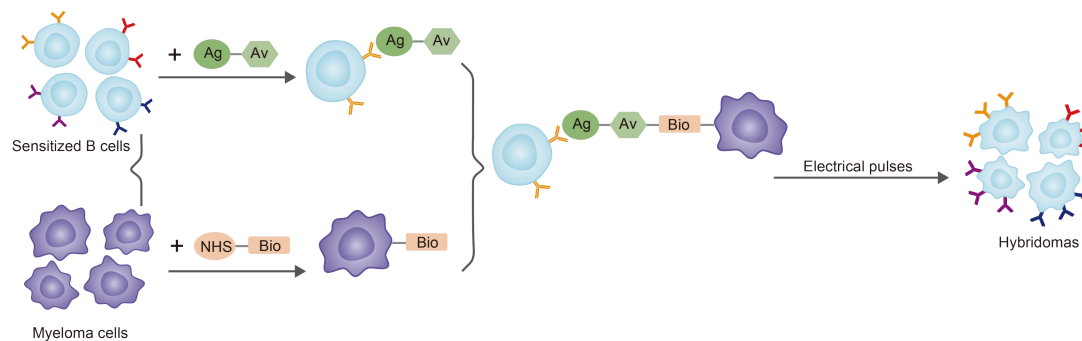
Creative Biolabs provides a comprehensive set of services in custom monoclonal and polyclonal antibody production from protein expression, antibody validation to various downstream processing. Our proprietary hybridoma-generation platforms allow top-quality services to support customers in developing high-affinity and high-specificity monoclonal antibodies. Our featured services include:

- 1 Mouse Hybridoma Generation
- 2 Rat/Mouse Hybridoma Generation
- 3 Ascites Antibody Production
- 4 Antibody Pair Development
- 5 Hybridoma Sequencing and Recombinant Antibody Production



Classic Hybridoma Technology

Next Generation Hybridoma Technology Based on B-Cell Targeting



1. Antigen-based preselection of B cells
2. Specific binding between myeloma and B cells by biotin and avidin interactions.
3. Electric pulse-induced fusion

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2.1.3 Single Domain Antibody Services

Creative Biolabs has established a cutting-edge service platform in single domain antibody development. Our extensive expertise will facilitate the progress of your research projects.

Advantages of Single Domain Antibody

- Smallest high-affinity antibody fragments with only 12-15 kDa
- Recognize hidden/cleft epitopes that conventional antibodies cannot
- High stability to existing and function in extreme conditions
- Easy cloning and no VH/VL pairing disruption
- High sequential and structural homology with human VH domains
- Outstanding tissue penetration (therapeutic)
- Short plasma half-life and superior clearance as diagnostic tools
- Excellent chaperone for the crystallization of challenging targets
- Easy manufacturing and high production yield in both eukaryotic and prokaryotic systems
- Great potential in downstream engineering (e.g., bispecific antibody, fusion protein, and humanization)

Featured Services

- One-Stop Solution for Single Domain Antibody Development
- One-Stop Solution for Anti-Membrane Protein sdAb Development
- One-Stop Solution for Anti-PTM sdAb Development
- One-Stop Solution for Bispecific sdAb Development
- One-Stop Solution for Anti-Idiotypic sdAb Development

Hot Animals

According to our client's needs, Creative Biolabs can immunize camel, llama, alpaca, or even shark as repertoire sources to develop single domain antibodies against the target of interest.



Alpaca

Llama

Camel

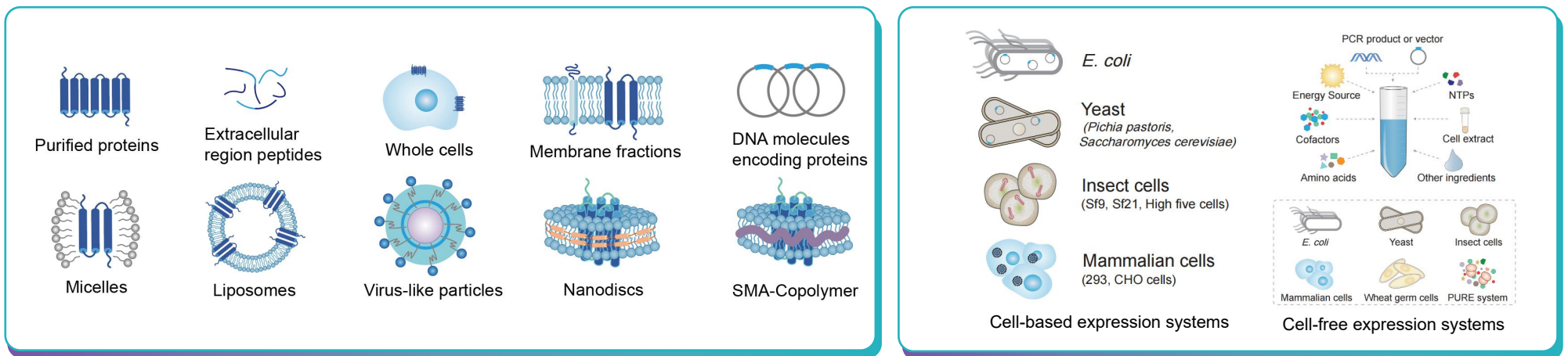
Shark

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2.1.4 Magic™ Membrane Protein Antibody Discovery Services

Membrane proteins serve key roles in cellular functioning and disease progression, mediating actions that are essential for the thriving of biological cells. With extensive expertise and advanced Magic™ platforms, Creative Biolabs offers end-to-end membrane protein antibody discovery and development services.



Formats of Antigen Membrane Proteins

Antigen expression systems

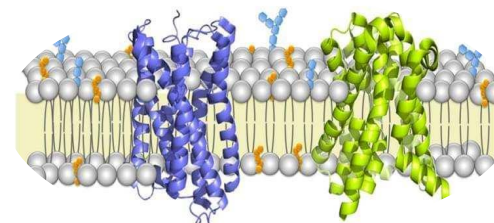


Other membrane protein services and products

- Membrane Protein Stable Cell Line Development
- Membrane Protein *In Vitro* Drugs Screening Assays
- Antibody Off-target Identification and Specificity Profiling Using Membrane Proteome Array
- Membranes, Virus-Like Particles (VLPs), Cell-free Kits



Membrane Protein Targets



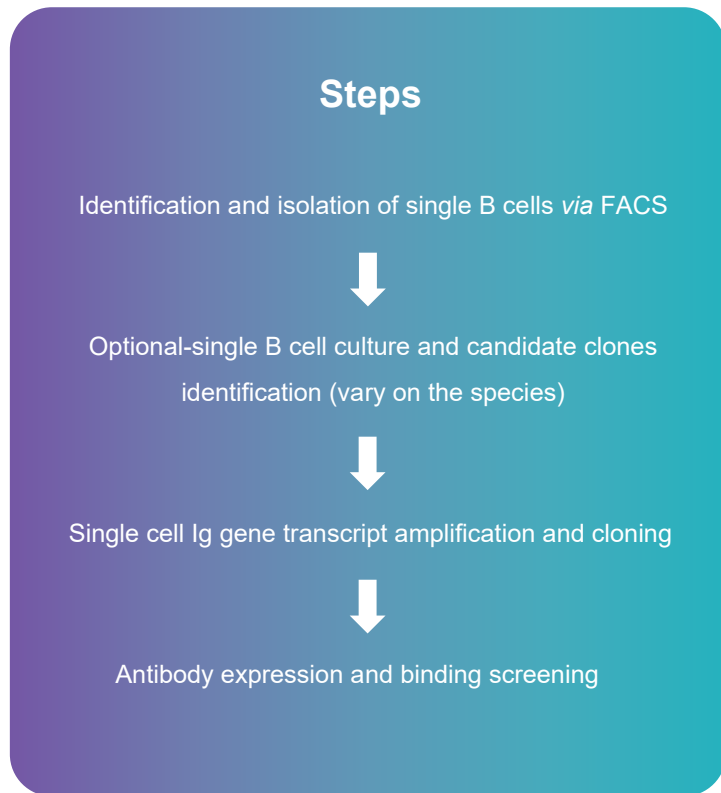
- 200+ GPCRs
- 30+ Transporters
- 100+ Ion-Channels
- 400+ Enzymes/Kinases
- 30+ Nuclear Receptors

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2.1.5 Native™ Antibody Discovery Services

Creative Biolabs has proudly developed the unique Native™ Antibody Discovery Platform for native monoclonal antibodies using the antigen-specific B lymphocytes sorting technology.



Main Advantages:

- Native paired of heavy and light chain
- Large antibody candidates pool
- Rapid screening and detection
- Facilitate rare antibodies discovery
- Diverse species available

Applications:

- Therapeutic antibody discovery—
New generation of human antibody
- Diagnostic antibody discovery—
Antibody pairing

Rabbit Camel Chicken Mouse Rat Bovine Human Monkey

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2.1.6 *In Vitro* Diagnostics (IVDs) Antibody Discovery Services

Creative Biolabs serves as a manufacturer and supplier of products, services, and solutions to IVDs of the life science community. Our core competencies and one-of-a-kind expertise are central to our ability to provide IVD raw materials and custom services to researchers. We strive to be a complete solution provider and a trusted source for IVDs.

Featured Services

IVD Ab Development



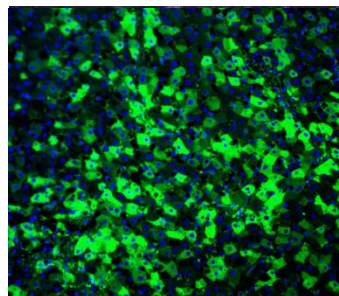
The rabbit immune system generates antibody diversity and optimizes affinity through more efficient mechanisms than those of mice and other rodents. This increases the possibility of obtaining better quality or novel antibodies for diagnostic applications.

Pairing Ab-Ab & Ab-Ag



Matched antibody pairs or antigen-antibody pairs are important materials that could be further used in assay/product development by sandwich or competitive assay.

Custom Detection Agents



Detection of molecules such as antibodies or aptamer could be conjugated with desired molecules to achieve a qualitative or quantitative analysis of biomarkers.

Prototype Assay



Pre-coated ELISA or custom immunoassay uses antibodies, proteins, peptides, oligonucleotides, aptamer and more according to project demands.

Assay/Kit Development



Full-service immunoassay development service bridges the path from discovery to product. Our scientific expertise provides highly customized solutions to meet your research demands in developing unique in vitro assays.

Featured Products

- 1 Matched Antibody Set
- 2 Immunoassay Blocker
- 3 Hapten Antigen-Antibody Set
- 4 IVD Antibody & Antigen
- 5 Humanized IVD Antibody
- 6 IVD Control Antibody & Serum

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2.2 Antibody Engineering Services

Creative Biolabs is specialized in providing customized antibody engineering and optimization services for both academic and biotech/pharmaceutical industries. With advanced technological platforms and experience, we provide versatile yet comprehensive antibody engineering services for our customers.



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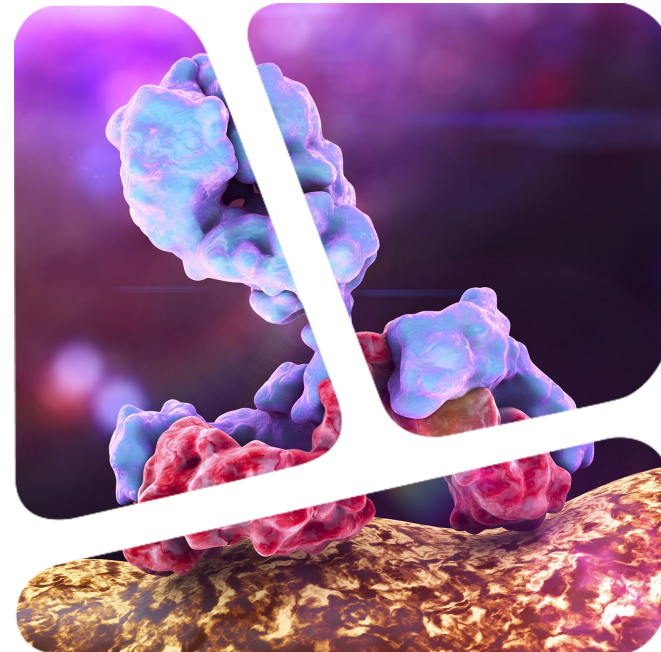
Quality / Experience / Dedication

1 Antibody Humanization Service

2 Antibody Affinity Maturation Service

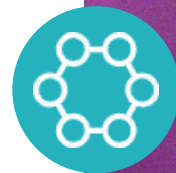
3 Antibody Specificity Optimization Service

4 CreDA™ Developability Assessment Service



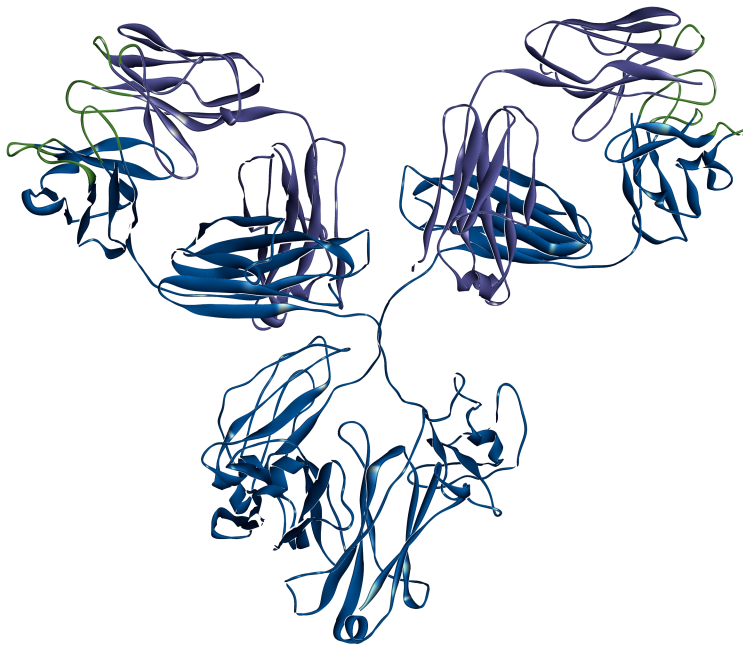
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2.2.1 Antibody Humanization Services

Creative Biolabs has established state-of-the-art antibody humanization platforms to humanize monoclonal antibodies derived from a wide range of species, including mouse, rat, rabbit, chicken, camelid, bovine, and canine. Our antibody humanization strategies preserve the specificity and affinity of antibodies, meanwhile significantly or completely avoiding antibody immunogenicity in humans.



Humanization Platforms

- CDR Grafting
- Chain Shuffling
- Ultraffi™ Antibody Humanization
- Mammalian IgG Display

Besides, Creative Biolabs also offers various antibody characterization services, including affinity measurement, specificity determination, potency & efficacy test, and therapeutic developability analysis.

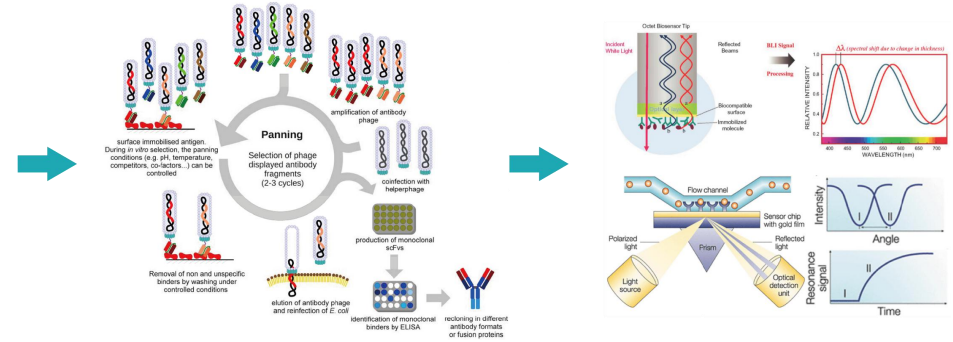
2.2.2 Antibody Affinity Maturation Services



Creative Biolabs provides an elaborated antibody affinity maturation service to help clients obtain antibody candidates with enhanced affinity. Our affinity maturation platform includes the following procedures: *in silico* analysis of parent antibody and mutation design, mutant scFv/Fab phage-display library construction, candidate selection and verification.



In silico analysis and mutation design



Mutant scFv/Fab phage-display library construction (Schirrmann T. *et al*, 2011)

Candidate selection and verification (Nirschl M. *et al*, 2011)

Mutant Library Construction Approaches

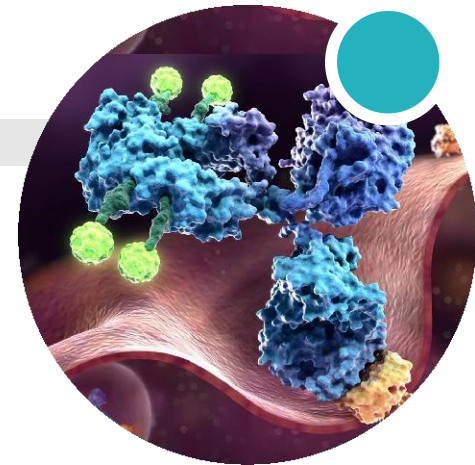
- Random Methods
 - ✓ Error-prone PCR
 - ✓ DNA shuffling
 - ✓ Random primers (NNK) + CDR walking
- Hotspot Mutations
- Semi-rational Design: library design based on docking, alanine scanning, and sequence analysis
- Rational Design: mutants design based on structural models

Key Features

- Excellent library diversity (up to 10^{10}) and minimized amplification bias
- Flexible to make single or multiple amino acid variants within variable region cassette
- Reliable, cost-effective solutions and short turnaround time
- Resulted affinity in the nM range or improved affinity by a factor of 10-fold

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2.2.3 Antibody Specificity Optimization Services



This technique allows highly selective interactions toward the target of interest while avoiding the binding of unrelated proteins, which is crucial for both therapeutic and diagnostic antibodies. Creative Biolabs provides antibody specificity optimization services based on *in silico* analysis, mutation design, and experimental verification. Since this approach does not involve the mutant library construction and screening process, optimized antibody candidates with enhanced specificity can be delivered timely and cost-efficiently.

Typical workflow of our antibody specificity optimization service



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2.2.4 CreDA™ Developability Assessment Services

What is Developability Assessment

Developability assessment is a risk assessment through which the best drug candidate can be selected or if necessary, risk-mitigated to fulfill the manufacturing, formulation, and safety characteristics before expensive development efforts are initiated.

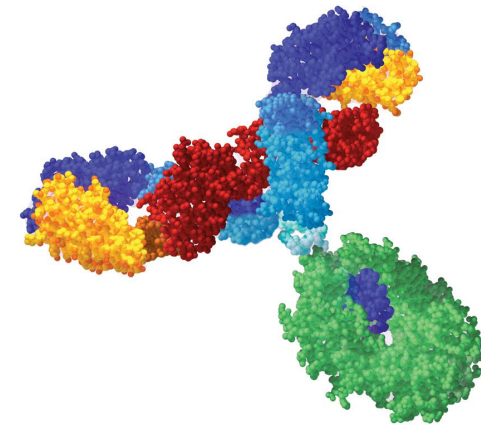
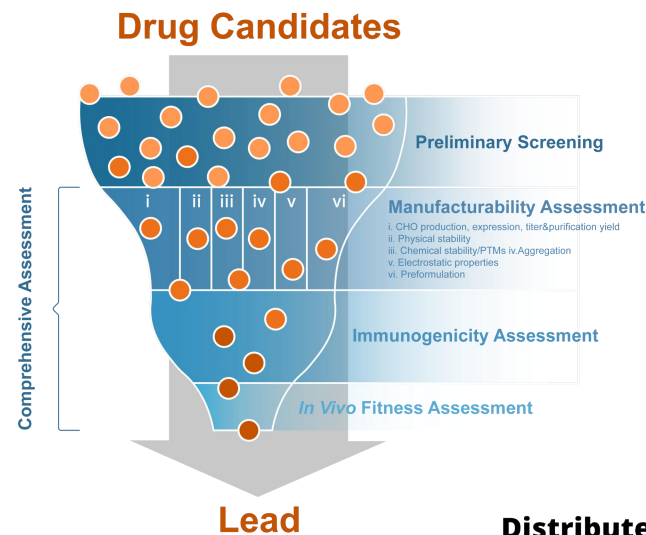
Developability Assessment Service at Creative Biolabs

Creative Biolabs offers comprehensive and state-of-the-art CreDA™ developability assessment services for your drug candidates to address issues that may lead to potential clinical failure. Through this assessment, the most promising candidate will be identified or engineered to fulfill manufacturing, formulation, and safety characteristics before moving down to the costly developmental processes.

Our CreDA™ platform consists of two major modules:

A preliminary screening stage

A comprehensive assessment stage



Depiction of epitope candidates onto the structure

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2.3 Antibody-Drug Conjugate (ADC) Services

With accumulated experience in recombinant antibody production, antibody engineering, synthetic chemistry, and bio-conjugation, Creative Biolabs is dedicated to serving the unique needs of our clients in ADC projects by providing customized services tailored to meet your R&D timeline and budget. Our ADC services include the following items:

- 1 Antibody Screening
- 2 DrugInk™ Custom Synthesis
- 3 Antibody Design and Conjugation
- 4 ADC *In Vitro* Analysis
- 5 ADC *In Vivo* Analysis
- 6 Antibody-Based Probes
- 7 ADC Manufacturing

Our Advantages

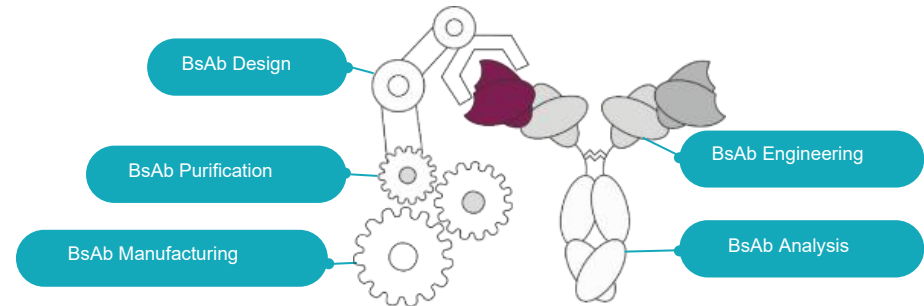
- One-stop-shop of all aspects in ADC research and evaluation
- A variety of ADC building blocks
- Comprehensive technological services and consultation
- Customized services to meet your R&D timeline and budget

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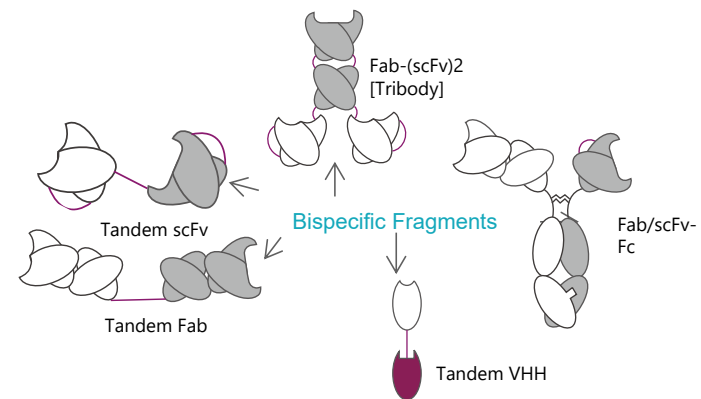
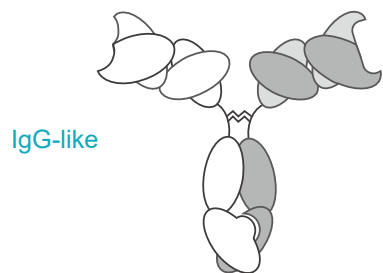
2.4 Bispecific Antibody (BsAb) Services

One-stop Services
(Focus on Bispecific Antibody, Focus on Creative Biolabs)



With our established BsAb generation platforms, Creative Biolabs has designed and produced numerous bi- and tri-specific molecules for our clients in different formats, including IgG-like, appended IgGs, and bispecific fragments.

Based on advanced technologies and years of experience, Creative Biolabs offers one-stop, comprehensive BsAb services covering the entire BsAb design and development process to best suit your technological, design, and budget requirements.



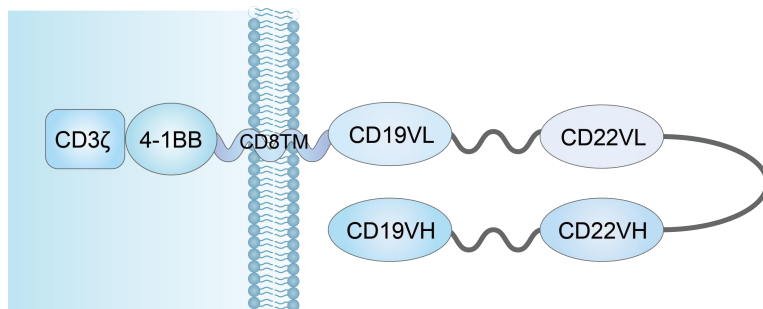
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2.4 Bispecific Antibody (BsAb) Services

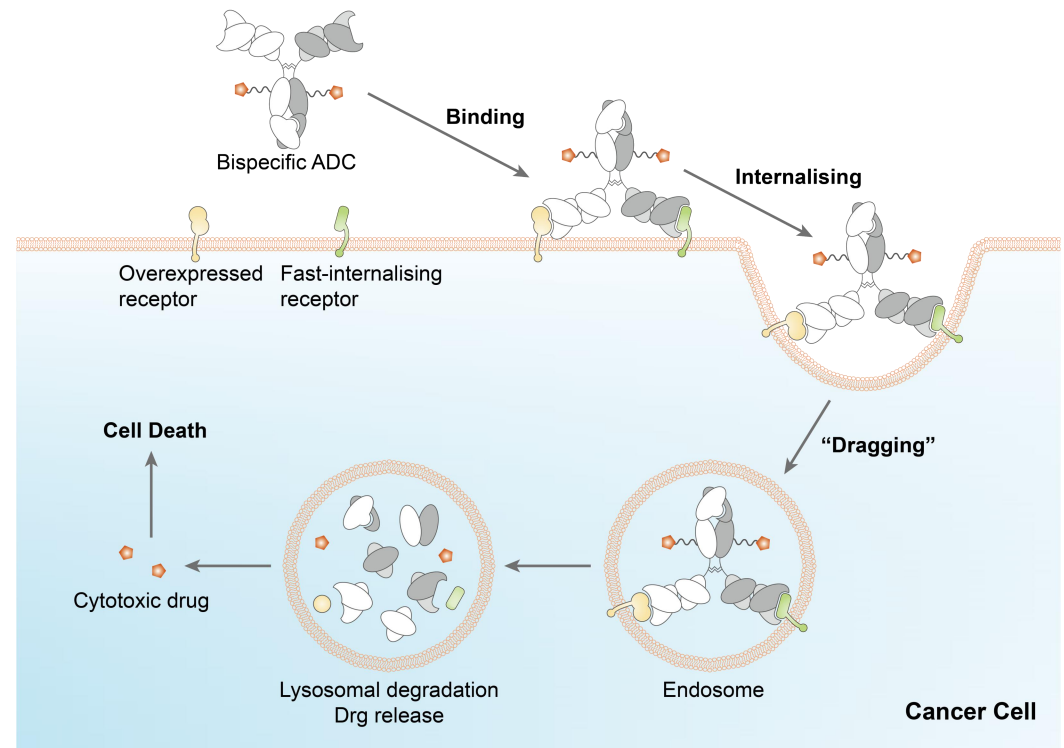


Leveraged Platforms for BsAb Development:

- Antibody discovery
- Antibody engineering
- Bispecific antibody (BsAb) developability assessment
- Bispecific antibody (BsAb) sequencing
- Bispecific antibody mimetics development
- Bispecific antibody-drug conjugate (ADC) development
- Bispecific CAR-T development



An example of a bispecific CAR construct (Terry J Fry, *et al.* 2018)



Schematic mechanism of action of bispecific ADCs (Maruani, 2018)

2.5 Antibody Analysis Services

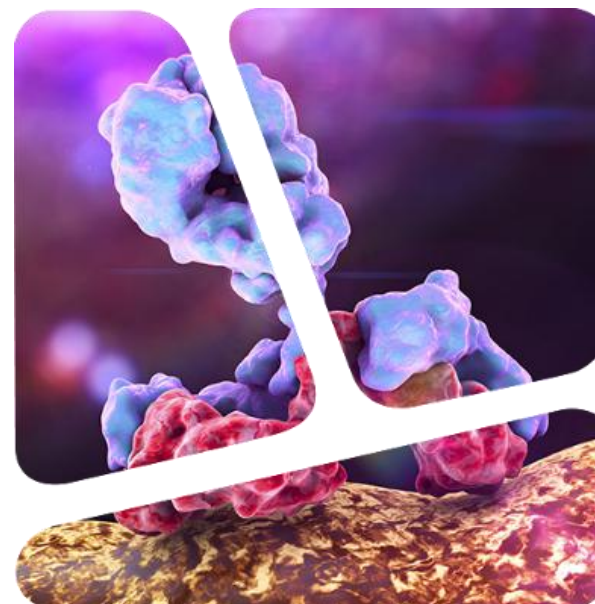
Creative Biolabs provides comprehensive antibody analysis services to fully elucidate antibody structural and biochemical properties. We offer tailored antibody analysis programs to support drug discovery, manufacturing, and other related projects.

- 1 *De Novo* Antibody Sequencing Service
- 2 CreMap™ Epitope Mapping & Discovery Service
- 3 SIAT® Immunogenicity Assessment Service
- 4 Antibody Function Assay Service
- 5 Antibody PK/PD Study Service
- 6 Antibody Function Study in Humanized Immune Checkpoint Knock-in Mouse Models



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Quality / Experience / Dedication

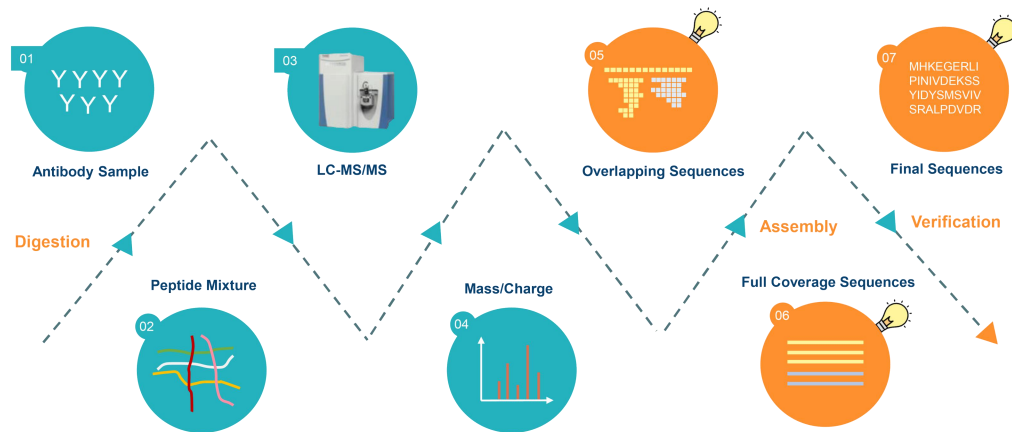


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2.5.1 *De Novo* Antibody Sequencing Services

Creative Biolabs proudly provides *De Novo* Antibody Sequencing Services based on our next-generation antibody sequencing platform adopting the proprietary Database Assisted Shotgun Sequencing (DASS) technology and with unchallenged ability to achieve 100% accuracy in antibody sequencing by precisely distinguishing between leucine and isoleucine. Our sequencing services consist of the variable regions, variable plus leader regions, as well as full-length heavy and light-chain antibody sequencing for all species, isotypes, and allotypes. Purified monoclonal antibodies in multivalent forms can be sequenced with 100% coverage of the desired regions and sufficient accuracy.



De Novo Antibody Sequencing Workflow by DASS

Our Advantages

- **Accurate:** Precise discrimination of leucine & isoleucine by mass spectrometry.
- **Reliable:** 98% of sequenced mAbs show equal or better performance than originator.
- **Robust:** We guarantee 100% coverage of VJ and VDJ regions.
- **Experienced:** We have sequenced over 1,000 mAbs.
- **Flexible:** Sequence antibody conjugates, BSA containing mAbs, lama or rabbit mAbs, IgMs or even immobilized mAbs.
- **Sensitive:** Full coverage from 50-100 µg samples.
- **High-throughput:** We would be pleased to plan your HT-project up to 200 mAbs/year.
- **Professional:** Expert R&D team dedicated to optimizing top-quality data delivery.

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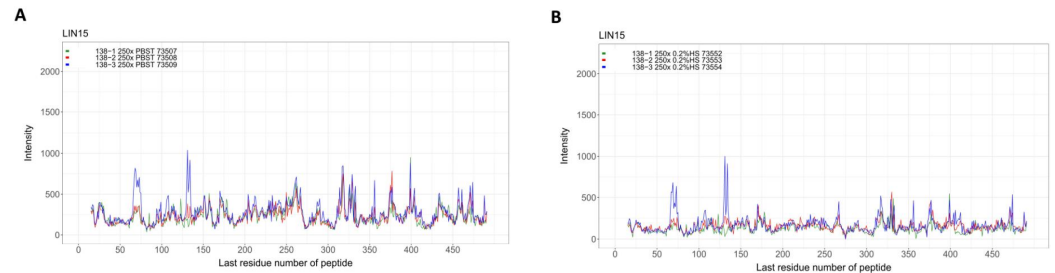
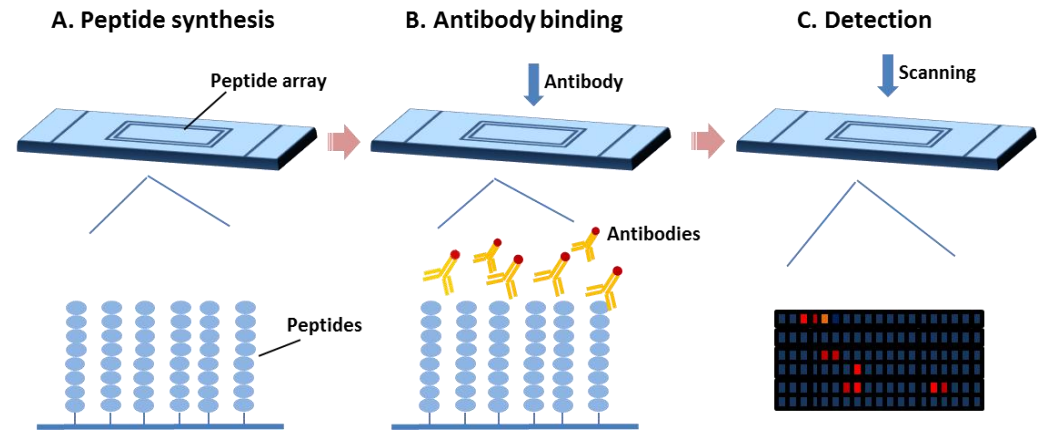
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2.5.2 CreMap™ Epitope Mapping & Discovery Services

Epitope mapping aims to identify the binding sites of antibodies on their target antigens and has become an essential technique in vaccine and antibody drug development. Creative Biolabs is highly experienced in providing comprehensive epitope mapping services to meet customers' demands.

Creative Biolabs offers Various Types of Epitope Mapping Technologies

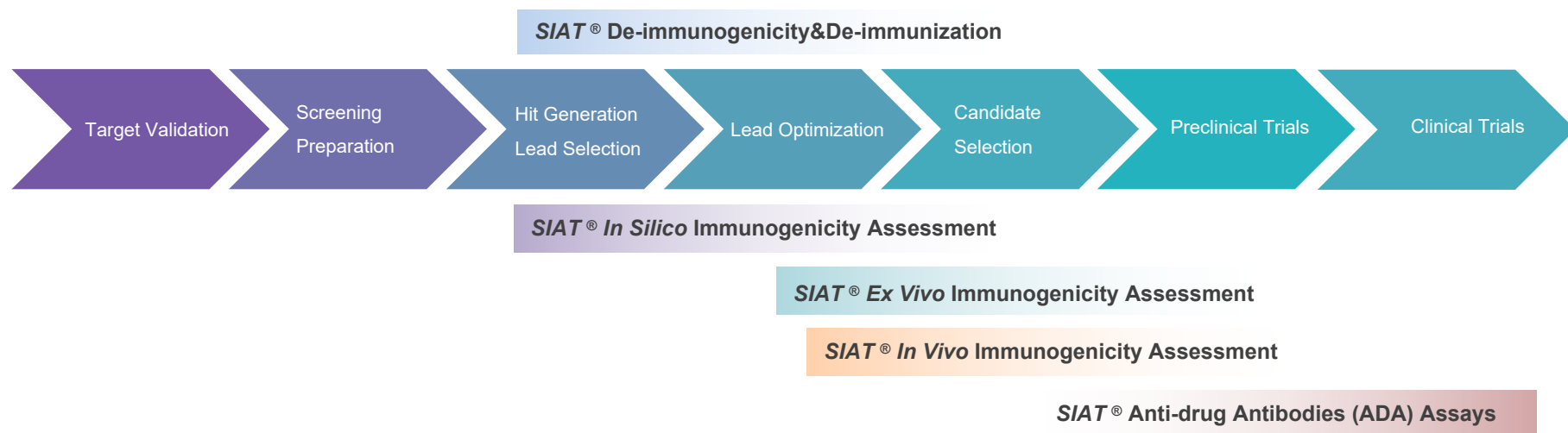
- Epitope Mapping by X-ray Crystallography
- Epitope Mapping by Peptide Libraries
- Epitope Mapping by LC-MS
- Epitope Mapping by 3D-EM
- Epitope Prediction for Antibody Epitopes Identification
- Epitope Mapping by High Throughput System
 - ✓ CreMap™ Peptide/Protein Microarray Service
 - ✓ CreMap™ Epitope Mapping on a Microfluidic Peptide Microarray
 - ✓ CreMap™ Alanine Scanning Mutagenesis Mapping Service



Intensity profiles recorded on the linear peptide array

2.5.3 SIAT® Immunogenicity Assessment Services

Creative Biolabs has established a proprietary Sensitive Immunogenicity Assessment Technology® (SIAT®) system to evaluate the immunogenicity potential for a broad range of bio-therapeutic drug candidates, including protein, enzyme, antibody, and antibody-drug conjugate (ADC).



Featured Services of SIAT® System

- *In Silico* Immunogenicity Assessment
- *In Vitro* Class I/II HLA Binding Assay
- *Ex Vivo* Immunogenicity Assessment
 - ✓ DC-T Cell Proliferation Assay
 - ✓ Antigen Presentation Assay
- *In Vivo* Immunogenicity Assessment
- Anti-drug Antibody (ADA) Assay
- De-immunization Service

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2.5.4 Antibody Function Assay Services

Antibody Function Assay

Creative Biolabs provides the most comprehensive portfolio for antibody function assays to perform in-depth validation of your antibody lead in the early stages. Scientists at Creative Biolabs are experienced in designing custom assay schemes to meet different expectations and requirements in a customer-centered manner. Our antibody function assays cover many issues, including but not limited to:

Target-based Function Analysis & Characterization Assays

- Target Binding Assay
- Cell Proliferation Assays
- Apoptosis and Cell Death Assays
- Neutralization Assays
- Endocytosis and Internalization Assays
- Angiogenesis Investigation Assays
- Cytokine Release Evaluation Assays

Fc-mediated Effector Functional Assays

- Fc-mediated Effector Functional Assays (ADCC, ADCP and CDC Assays)
- Fc Profiling Service (FcγR, FcRn and C1q Binding Assays)

Immune Assays

- T Cell Stimulation and Proliferation Assays
- Cytotoxic T Cell-Based Tumor Killing Assays
- Immune Checkpoint Functional Assays
- MLR (Mixed Lymphocyte Reaction) Assays

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2.5.5 Antibody PK/PD Study Services



With a comprehensive collection of model systems, Creative Biolabs provides global customers with PK/PD analysis in various species, including but not limited to [mouse](#), [rat](#), [rabbit](#), [dog](#), [pig](#) and [monkey](#).

Our Animal Disease Models

Oncology

- Syngeneic Models
- Xenograft Models
- Humanized Models

Inflammation & Immunological Disease

- Sepsis
- Rheumatoid Arthritis
- Osteoarthritis
- Inflammatory Bowel Disease
- System Lupus Erythematosus
- Delayed-Type Hypersensitivity
- Passive Cutaneous Anaphylaxis
- Psoriasis

Metabolic Disease

- Obesity and Diabetes: DIO induced, ob/ob mice, db/db mice
- Diabetic Nephropathy
- Dyslipidemia
- NASH
- Acute and Chronic Liver Injury
- Liver Fibrosis and Cirrhosis

Neurological Disorders and Pain

- Alzheimer's Disease
- Parkinson's Disease
- Experimental Autoimmune Encephalomyelitis (EAE): MBP, MOG, PLP
- Inflammatory Pain: Formalin, Carrageenan, CFA
- Neuropathic Pain: CCI, SNL, Diabetic Neuropathy, Chemotherapy Neuropathy
- Migraine: NTG induced

Urological System Disease

- Renal Ischemia-Reperfusion (IR) Model
- Unilateral Ureter Obstruction (UUO)
- 5/6 Nephrectomy

Cardiovascular Disease

- Ischemic Stroke: MCAO
- Acute Myocardial Infarction
- Pulmonary Arterial Hypertension
- Thrombosis

Ocular Disease

Respiratory Disease

- Asthma
- BLM-induced Lung Fibrosis
- LPS-induced Acute Lung Injury

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2.5.6 Antibody Function Study in Humanized Immune Checkpoint Knock-in Mouse Models

Creative Biolabs provides specialty human immune checkpoint knock-in mice to facilitate diverse immunotherapy development for our worldwide clients, including but not limited to :

Humanized Immune Checkpoint Knock-in Mouse Models					
CD47	PD-1	PD-L1	CTLA-4	TIM3	TIGIT
BTLA	LAG-3	OX40	GITR	CD27	CD28
CD137	CD40	CD80	SIRP α	IDO	CD86
IL-17A	VEGI	ICOS	IL6R	CD276	VISTA
TNF- α	OX40L	CFS1R	Fcgrt	CD3e	KDR
CD73	CD4	PCSK9	ICOSL	TNFR2	TLR9
CSF1R	FcRn	CCR2	hPD-1/hOX40	hPD-1/hPD-L1	hPD-1/hTIGIT
hPD-1/hTIM-3	hPD-1/hBTLA	hPD-1/h4-1BB	hPD-1/hLAG-3	hPD-1/hCD27	hPD-1/hCTLA-4
hPD-L1/hCTLA-4	hPD-L1/hTIM-3	PD-L1/hTIGIT	hPD-L1/hOX40	hPD-L1/hLAG-3	hCTLA-4/hOX40
hSIRP α /hCD47	hOX40/h4-1BB	hPD-1/hCD47	hPD-1/hGITR	hPD-1/hCD28	hPD-1/hSIRP α
hPD-1/hCD3e	hPD-1/hCD40	hPD-1/hSEMA4D	hPD-1/hTLR9	hPD-1/hVISTA	hCTLA-4/hCD137
hCTLA-4/hLAG3	hCTLA-4/hTIM3	hTLR9/hOX40	hPD-L1/h4-1BB	hPD-L1/hCD27	hPD-L1/hCD40
hPD-L1/hGITR	hICOS/hCCR2	hCD19/hCD3e	hPD-L1/hSIRP α /hCD47	hPD-1/hPD-L1/hIDO1	hPD-1/hPD-L1/hOX40
hPD-1/hPD-L1/hPD-L2	hPD-1/hPD-L1/hCTLA4	hPD-1/hTIGIT/hTIM3	hPD-1/hPD-L1/hTIGIT	hPD-1/hPD-L1/hLAG3	hPD-1/hPD-L1/h4-1BB
hSIRP α /hCD47/hPD-1	hCD3EDG	hPD-1/hPD-L1/hSIRP α /hCD47			

2.6 Antibody Manufacturing Services

Creative Biolabs offers customized protein expression and bio-manufacturing services that cover the full process of gene synthesis, vector construction, pilot expression, process optimization, fermentation, and protein purification. Besides, we also offer services in stable cell lines generation to produce antibody/protein.



Our Advantage

Using multiple expression systems, Creative Biolabs provides high-efficiency production and purification services for various antibody/protein scaffold formats, including recombinant IgG, bispecific antibodies, scFv, Fab, and single-domain antibodies (sdAbs).



EXPRESSION SYSTEMS

Bacterial expression systems

- *E. coli*

Yeast expression systems

- *Saccharomyces cerevisiae*
- *Pichia pastoris*

Plant expression systems

- Tobacco plant cells
- Modified carrot plant root cells

Insect expression systems

- Baculovirus expression bector system
- *Drosophila* expression system

Mammalian expression systems

- Non-human mammalian expression systems (CHO, SP2/0, etc.)
- Human mammalian expression systems (HEK293, HT-1080, etc.)

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PART 3

FEATURED
PRODUCTS

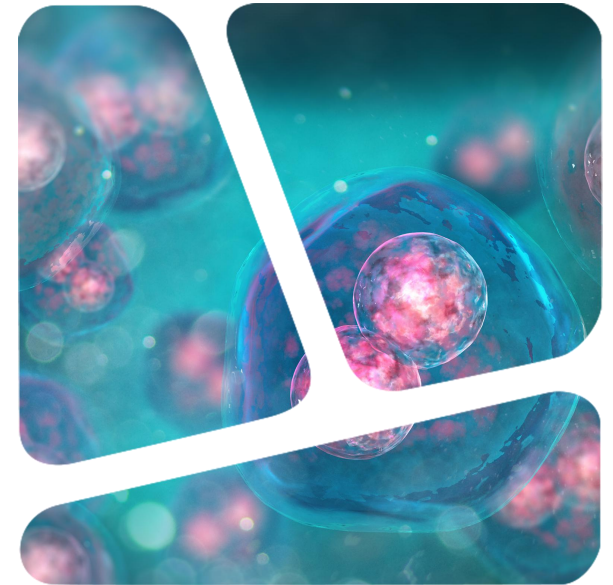
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3.1 Premade Antibody & Peptide Libraries

Creative Biolabs has created a series of libraries for *de novo* discovery of therapeutic antibodies and peptides. Our premade and ready-to-use libraries can accelerate your research and promote success rates. To fulfill customers' demands, we provide libraries in the forms of scFv, Fab, VHH and peptides originating from various species, including human, mouse, rabbit, chicken, camel, llama, or via DNA synthesis.



1 Antibody Libraries

- Premade Human and Mouse Antibody Library
- Yeast Display Human scFv Library
- Premade Single Domain Antibody Library
- Immunized Human Antibody Library
- And more...

2 Peptide Libraries

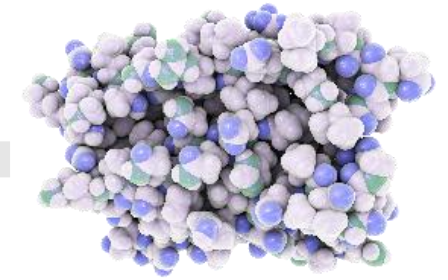
- TriCo-16™ Phage Display Peptide Library
- TriCo-20™ Phage Display Peptide Library
- And more...

3 Protein Scaffold Libraries

- Protein AC Domain Scaffold Library
- Monobody/Adnectin/FN3 Scaffold Library
- And more...

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3.1 Premade Antibody & Peptide Library



Creative Biolabs provides high-quality premade antibody and peptide libraries for therapeutic/diagnostic agent discovery, including but not limited to:

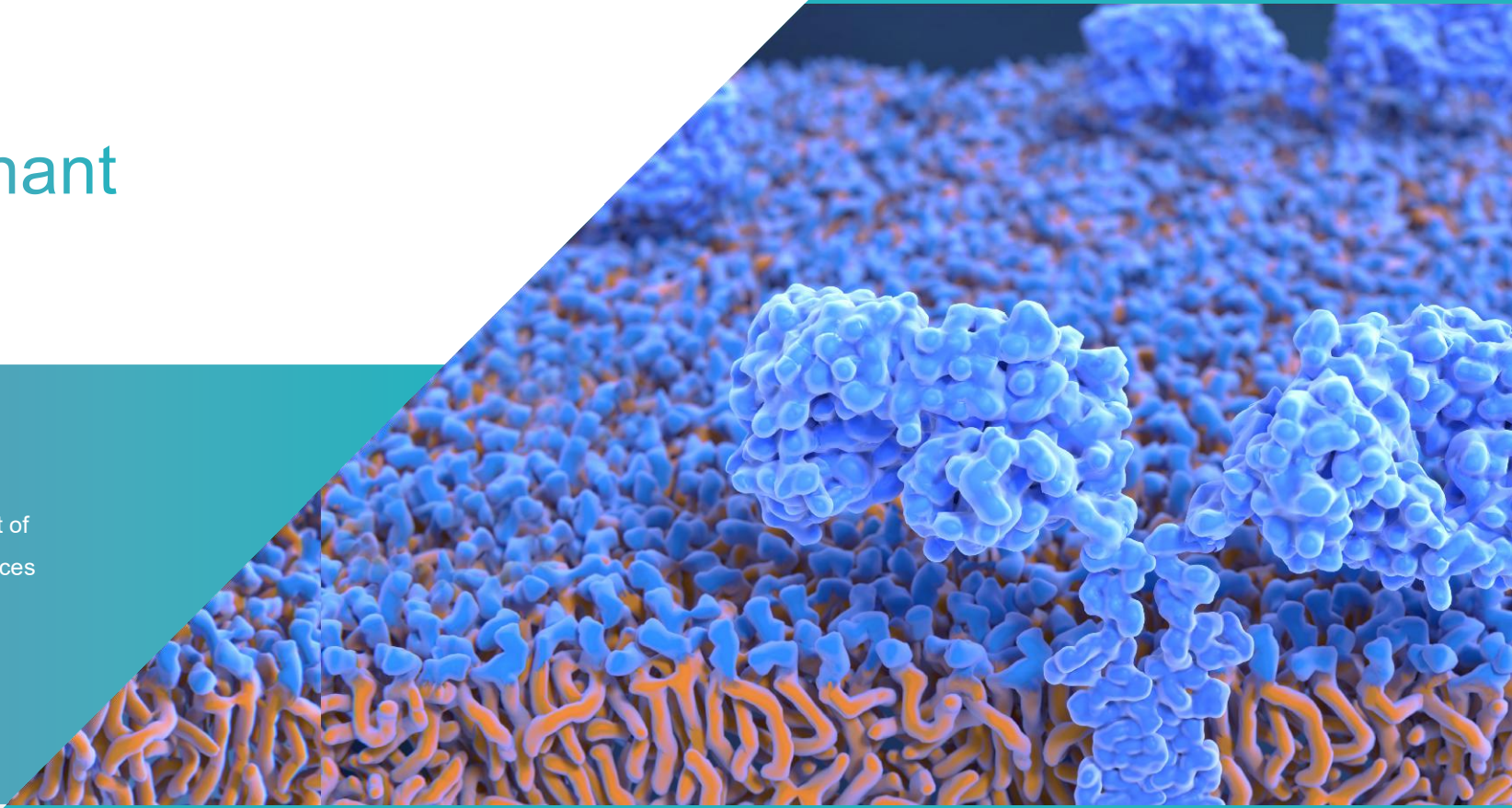
Product Name	Category	Type	Display Technology	Species	Library Size
HuScL(R)	Human Single Chain (scFv) Antibody Library	Naïve scFv library	Phage display	Human	1.0×10^{11}
HuFabL(R)	Human Fab Antibody Library	Naïve Fab library	Phage display	Human	1.1×10^{10}
MuScL(R)	Murine Single Chain Antibody Library	Naïve scFv library	Phage display	Murine	5.3×10^{10}
MuFabL(R)	Murine Fab Antibody Library	Naïve Fab library	Phage display	Murine	1.1×10^{10}
ChScL(R)	Chicken Single Chain Antibody Library	Naïve scFv library	Phage display	Chicken	1.2×10^9
CaVHHL(R)	Premade Single Domain Antibody Library	Naïve VHH library	Phage display	Camel	3.0×10^{10}
LlVHHL-1	Premade Single Domain Antibody Library	Naïve VHH library	Phage display	Llama	2.0×10^9
VHHL-S	Premade Single Domain Antibody Library	Synthetic VHH library	Phage display	Alpaca	7.0×10^{10}
TriCo-C9	Premade Phage Display Peptide Library	-	Phage display	-	1.1×10^{10}
TriCo-16™	Premade Phage Display Peptide Library	-	Phage display	-	2.6×10^{10}
TriCo-20™	Premade Phage Display Peptide Library	-	Phage display	-	1.7×10^9

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3.2 Recombinant Antibodies

Our cutting-edge antibody generation platforms reserved a comprehensive list of engineered antibody products and services at the most competitive prices.



1 Hi-Affi™ Recombinant Antibodies

- Recombinant Antibodies
- scFv Fragment Antibodies
- Fab Fragment Antibodies
- Chicken IgY Antibodies
- Rabbit Monoclonal Antibodies
- Blocking Antibodies
- Neutralizing Antibodies

2 Therapeutic Antibodies

- Chimeric Antibodies
- Human Antibodies
- Humanized Antibodies
- ADCC Enhanced Antibodies
- Mouse Antibodies

3 Intrabodies

4 Immunotoxins

5 Single-Domain Antibodies

6 Antibody-Cytokine Fusion Proteins

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3.2 Recombinant Antibodies

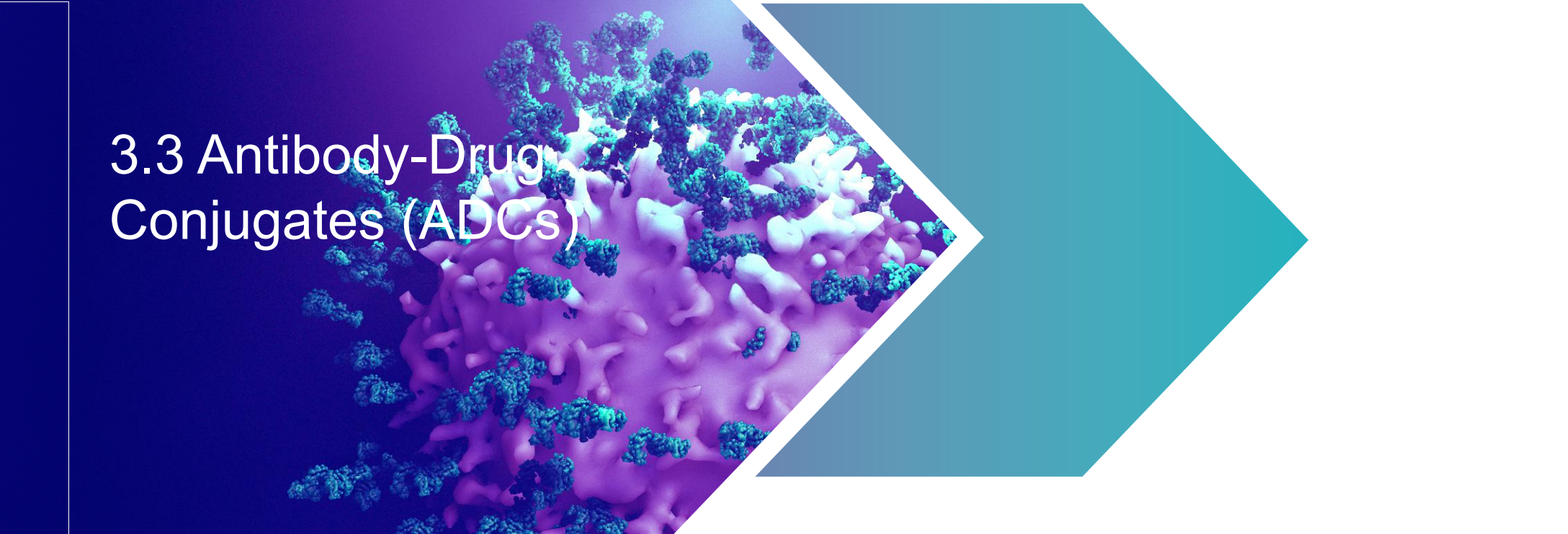
Creative Biolabs specializes in the production of recombinant antibodies, providing the most comprehensive list of recombinant antibody products. We have developed diverse antibody formats, such as Fab, scFv, chimeric, full-length IgG and IgM antibodies, and antibody-cytokine fusion protein.

Cat No.	Product Name	Target	Species Reactivity	Type
TAB-016	Anti-Human CD20 Recombinant Antibody	CD20	Human	Chimeric antibody
TAB-005	Anti-Human ErbB2 Recombinant Antibody	ErbB2	Human	Humanized antibody
HPAB-0472-CN	Mouse Anti-CEACAM1 Recombinant Antibody	CEACAM1	Human	Mouse antibody
PABS-0040	Human Anti-EBV gB Recombinant Antibody	EBV gB	EBV	Human antibody
HPAB-0132CQ	Human Anti-CD28 Recombinant Antibody	CD28	Human	Blocking antibody
MRO-1214LC	Anti-SARS-CoV S Recombinant Antibody	SARS-CoV S	SARS-CoV	Neutralizing antibody
ZG-0690J	Rabbit Anti-GPC3 Recombinant Antibody	GPC3	Human	Rabbit monoclonal antibody
HPAB-0189CQ-F(E)	Human Anti-GLP1R Recombinant Antibody Fab Fragment	GLP1R	Human	Fab Fragment
TAB-1620CL-S(P)	Anti-Human CD19 Recombinant Antibody scFv Fragment	CD19	Human	scFv Fragment
AGTO-G010D	Anti-CD3E immunotoxin (scFv)-DT	CD3E	Human	Immunotoxin
ACFP-SH132	Anti-CD20 Antibody-Cytokine Fusion Protein, IgG-IL2	CD20	Human	Immunocytokine

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3.3 Antibody-Drug Conjugates (ADCs)



Creating a successful antibody-drug conjugate (ADC) is an elaborate process involving meticulous investigation, careful design, and equal importance, good building blocks for such elegant "molecular LEGO sets". Creative Biolabs has extended the inventory of ADC products that can serve as a "kick-starter" for your ADC projects and speed up your progress in ADC development.

1 Customized ADCs

Customized ADCs by conjugating therapeutic antibodies against cancer surface antigens with different drug-linker complexes.

3 Anti-Ab ADCs

Proteins or secondary antibodies are pre-loaded with toxins that interact with a certain region of monoclonal antibody.

2 DrugLink Products

Platform for customized synthesis of drug-linker complexes; it also offers toxins, linkers, and ready-to-use synthesized drug-linker complexes to support the development of new-generation ADCs.

4 Anti-drug Abs

Antibodies against ADC toxin antigens, which will be valuable assets to facilitate the PK and safety evaluation of newly developed ADCs bearing these drugs.

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3.3 Antibody-Drug Conjugates (ADCs)

The three components of the ADC together give rise to a powerful oncolytic agent capable of delivering normally intolerable cytotoxins directly to cancer cells. Linker chemistry is an important determinant of the safety, specificity, potency and activity of ADCs. Auristatins, maytansines and calicheamicins are the most commonly used toxins for ADCs. At present, eleven ADCs have received regulatory approval with a variety of others in clinical development. Creative Biolabs has several ADC related products available from milligram to gram sizes for basic research and preclinical studies.

Cat No.	Product Name	Category	Cat No.	Product Name	Category
ADC-W-582	Anti-ERBB2-SMCC-DM1 ADC	ADC	ADC-P-020	MMAF	Toxin
ADC-W-460	Anti-NCAMI-SPP-DM1 ADC	ADC	ADC-P-012	Dolastatin 10	Toxin
ADC-W-564	Anti-MUC16-VC-MMAE ADC	ADC	ADC-P-002	alpha-Amanitin	Toxin
ADC-W-514	Anti-ERBB2-VC-DUBA ADC	ADC	ADC-P-018	MMAD	Toxin
ADC-W-604	Anti-FUT3-MC-VC-PAB-MMAF ADC	ADC	ADC-P-31	Tubulysin M	Toxin
ADC-W-786	Anti-CD2-MC-VC-PAB-SN38 ADC	ADC	ADC-P-034	DM4	Toxin
ADC-W-808	Anti-CD248-MC-MMAF ADC	ADC	ADC-L-005	Mc-Val-Cit-PABC-PNP	Linker
ADC-W-945	Anti-CD6-SPDB-DM4 ADC	ADC	ADC-L-038	Val-Cit-PAB	Linker
ADC-S-005	Mc-MMAE	Linker-toxin	ADC-L-012	Ala-Ala-Asn-PAB TFA salt	Linker
ADC-S-009	SMCC-DM1	Linker-toxin	ADC-L-015	Fmoc-Gly3-VC-PAB-PNP	Linker
ADC-S-010	SPDB-DM4	Linker-toxin	ADC-L-016	SMCC	Linker
ADC-S-013	MC-MMAF	Linker-toxin	ADC-AD-001	Anti-vc-PAB-MMAE polyclonal antibody	Anti-drug Ab
ADC-S-019	CL2A-SN38	Linker-toxin	ADC-AD-004	Anti-MMAF monoclonal antibody	Anti-drug Ab
ADC-S-020	AcBu-Calicheamicin	Linker-toxin	ADC-AD-008	Anti-DM1/DM4 monoclonal antibody	Anti-drug Ab
ADC-S-023	MC-VC-PAN-SN38	Linker-toxin	ADC-AA-001	Anti-HlgG(Fc)-N-MMAF ADC	Anti-Ab ADC
ADC-S-031	SG3249	Linker-toxin	ADC-AA-049	Protein G-MMAF ADC	Anti-Ab ADC
ADC-P-033	DM1	Toxin	ADC-AA-054	Protein A-MCC-DM1 ADC	Anti-Ab ADC

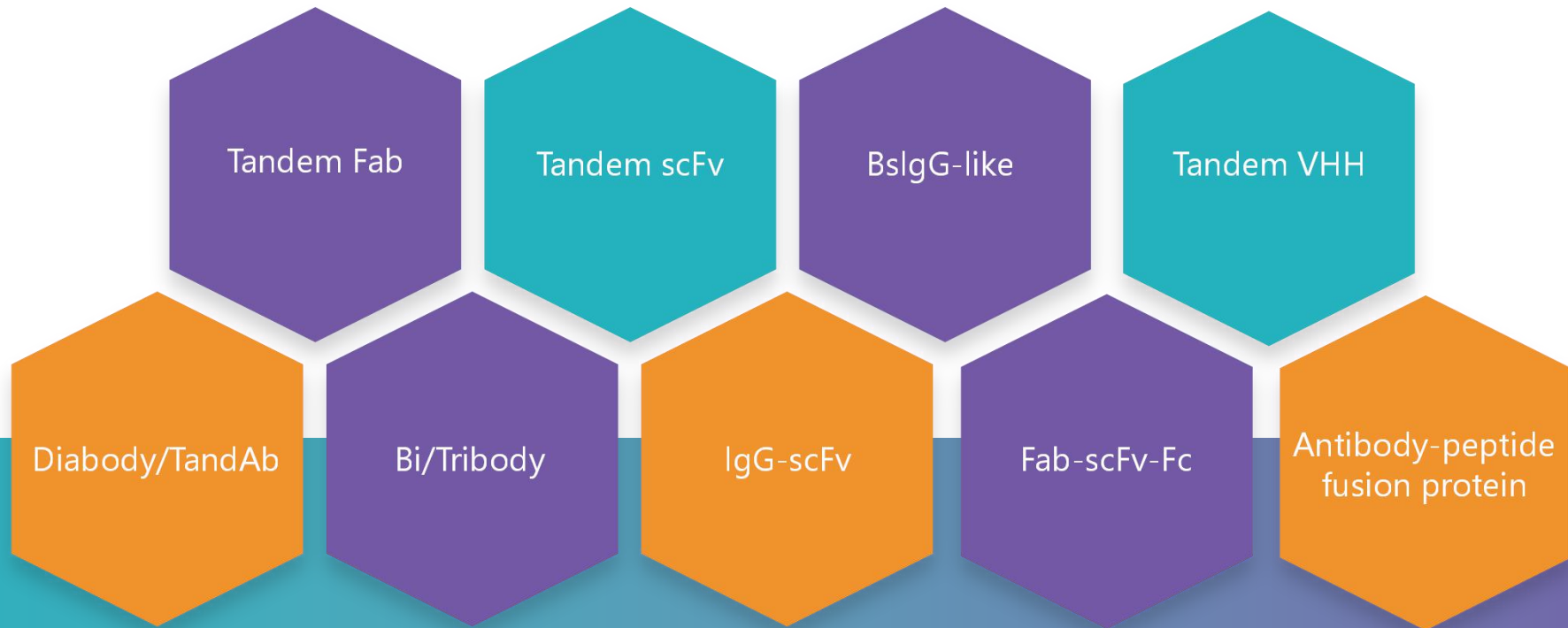
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3.4 Bispecific Antibodies

Creative Biolabs has advanced strategies (recombinant DNA technology, phage display technology, *etc.*) for the development of different bispecific antibodies (BsAbs), including bispecific IgGs, appended IgGs, BsAb fragments, bispecific fusion proteins, and BsAb conjugates of high affinity and specificity.

FEATURED PRODUCTS



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3.4 Bispecific Antibodies

Creative Biolabs collects hot therapeutic targets and popular formats to provide a variety of customized bispecific antibody (BsAb) products.

Product Name	Type	Species Reactivity	MOA
Anti-CD3 x Anti-CD19 Bi-specific T-cell engagers	Tandem scFv	Human	Retargeting of T cells to tumor
Anti-CD3 x Anti-CD123 Bi-specific T-cell engagers	Tandem scFv	Human	Retargeting of T cells to tumor
Anti-CD3 x Anti-EPCAM Bi-specific T-cell engagers	Tandem scFv	Human	Retargeting of T cells to tumor
Anti-CD16A x Anti-CD30 Bi-specific NK-cell engagers	Tandem scFv	Human	Retargeting of NK cells to tumor
Anti-CD3 x Anti-HER2 BsAb	CrossMab	Human	Retargeting of T cells to tumor
Anti-IL17A x Anti-TNF BsAb	TandAb	Human	Blockage of 2 cytokines
Anti-FIXa x Anti-FX BsAb	KIH-BsIgG	Human	Forced protein associations
Anti-CD3 x Anti-CD33 BsAb	IgG-gG	Human	Retargeting of T cells to tumor
Anti-CEA x Anti-AP BsAb	F(ab') ₂	Human	Immunoassay
Anti-CEA x Anti-HSG	F(ab') ₂	Human	Pretargeting tumor for PET or radioimaging
Anti-IL17A x Anti-TNF BsAb	IgG-sCFV	Human	Blockage of 2 cytokines
Anti-PD1 x Anti-CTLA4 BsAb	IgG-scFv	Human	Blockage of 2 cytokines
Anti-VEGFA x Anti-ANG2 BsAb	Tandem VHH	Human	Blockage of 2 proangiogenics
Anti-CD3 x Anti-CD123 BsAb	Fab/scFv-Fc	Human	Retargeting of T cells to tumor
Recombinant Anti-CD16 x Anti-CD33 xAnti-CD123 BsAb	Triplebody	Human	Retargeting of NK cells to tumor

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WHY US?

1

Experience and dedication to antibody development and engineering

2

Professional consultation and workable solutions

3

One-stop service for all aspects of antibody research and evaluation

4

Customized services to meet clients' R&D timeline and budget

5

Outstanding facilities, advanced technologies, and highly-knowledgeable scientific teams

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