Smart Lifesciences CRO services

High quality and efficient antibody&protein!

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2026.03

About Us

High quality and efficient antibody&protein!

Smart Lifesciences was founded at Changzhou, in 2013 and has developed a fully automated, high-throughput plasmid DNA&antibody production system capable of rapidly delivering service. Also have professional platforms for monoclonal antibody discovery, protein production, protein conjugation and detection. On the other hand, specifically, for the antibody service platform, we established CRO (Contract Research Organization) services in 2020 and until now we have gained more than 10 years' experience on antibody discovery.

Smart Lifesciences is keeping actively to develop more technology platforms. Especially, high throughput service will help to increase customer satisfaction and accomplish the target from the initiate lab R&D stage to industrial scale-up stage by the convenient and efficient methods.

CONTENT

Antibody Discovery and Production Services

· Alpaca VHH Antibody Discovery Service

· Rabbit Monoclonal Antibody Discovery Service

· Polyclonal Antibody Discovery Service

· Mouse Monoclonal Antibody Discovery Service

· Antibody Sequencing Service

· HTP and Large Scale Antibody Production Service

Antibody Discovery Services

Smart Lifesciences have setup Alpaca nanobody, rabbit mAb and mouse mAb discovery services, which include hybridoma cell fusion, single B screening, VHH libary construction (e.g. phage display) and antibody sequencing development platforms.

The suitable proposal according to our platform advantages and the request requirements will be adviced to help clients accomplish the targets, we also will provide the one on one professional and customized service, which will also include the final product, detection reports, IP, etc.

From antigen design through to customized antibody generation, our expert scientists and talented technical support team have got customer covered all the way.

Alpaca VHH Antibody Discovery Service

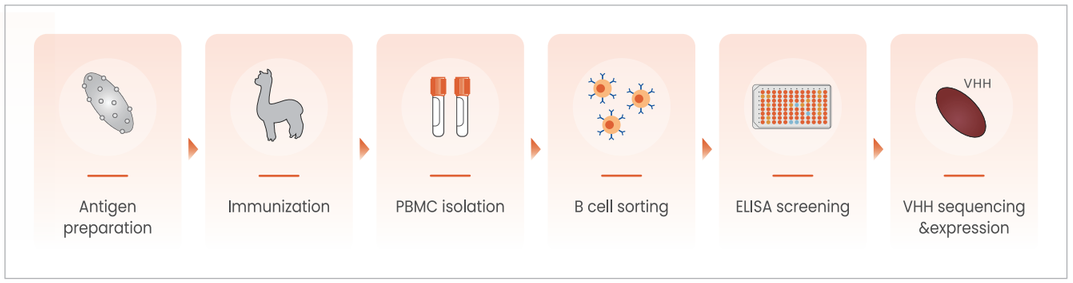
Introduction

At Smart Lifesciences, has developed proprietary procedures for nanobody discovery. We optimized the immunization schedule and screening proceddes to target-focused immune response and ensure the successful isolation of high-affinity alpaca nanobody within a short turnaround time.

Advantages of nanobody include, stability at high temperature & pH, VHHs could recognize antigenic sites that are normally not recognized by IgG antibodies, the small moleculara size could help with rapid tissue penetration and conjugation applications, low cost for large-scale production. All positice VHH generated under your project will belong to you.

Highlights

1. High throughput and shot timeline - single cell within 1 week.
2. Animal immunization (carrier protein to increase the anti-serum titer more than 20%, self-developed adjuvant).
3. Project success rate - 100%.
4. One stop solution - from gene to antibody.
5. Extensive experience - 13+ years.



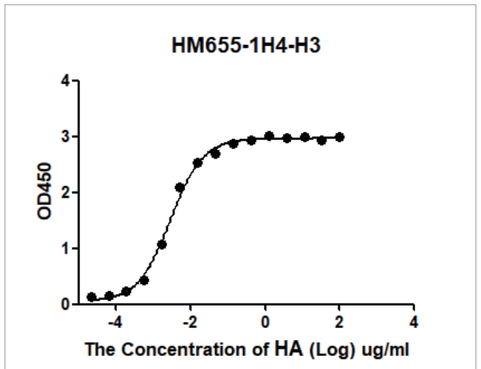
VHH antibody discovery process

Service Specifications

Phase	TAT(Weeks)	Deliverables
Phase 0: Antigen preparation		
· Peptide/Protein preparation	3-4	/
Phase I: Animal immunization		
· Three immunizations with conventional method & report only	8-10	ELISA report after the 3rd immunization
· Serum collection and PBMC isolation		
Phase II: Positive clones screening		
· B cell cloning & ELISA scrttning	2-4	ELISA report of positive clones
Phase III: Sequencing, recombinant VHH expression and validation		
· Antibody sequencing and construction	2-4	Antibody sequencing and alignment reports
· Small scale recombinant VHH production and validation		0.1mg recombinant VHH/clone (SDS-PAGE>90%, endotoxin level<5EU/mg)

Case Study

Immunization Target: peptides conjugated with carrier protein
Immunization Host: two rabbits
Solution: Successfully delivered the higher affinity anti-peptide VHH antibody(1H4-H3) successfully, which is also better than current commercial mouse mAb product. The turn around time is only 2 weeks from PBMC to VHH sequences.



1H4-H3 clone EC50 (KD is 0.18E-12M)

Rabbit Monoclonal Antibody Discovery Service

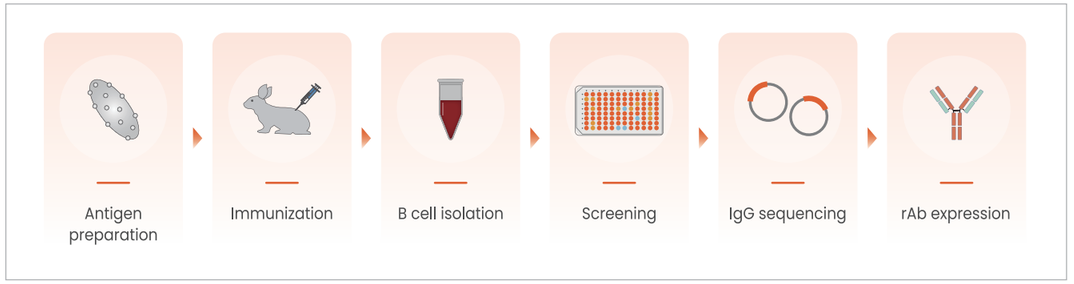
Introduction

Smart Lifesciences's B-cell cloning technology has a high success rate against difficult targets such as PTM site, small molecule,antibody drugs, etc. Our advanced, proprietary rabbit monoclonal antibody discovery technology involves the isolation and cell culture of rabbit B cells to generate high-specificity, high-affinity antibodies to meet customers' downstream applications.

In a word, this platform could offer higher specificity, affinity and high success rate, the ability to recognize more epitopes, and the capability to large scale antibody production and wide applications in scientific research, diagnostics, and therapeutics.

Highlights

1. Animal immunization (carrier protein to increase the anti-serum titer more than 20%, self-developed adjuvant).
2. Low price - almost same with mouse mAb.
3. Project success rate - 100%.
4. One stop solution - from gene to antibody.
5. Extensive experience - 13+ years.



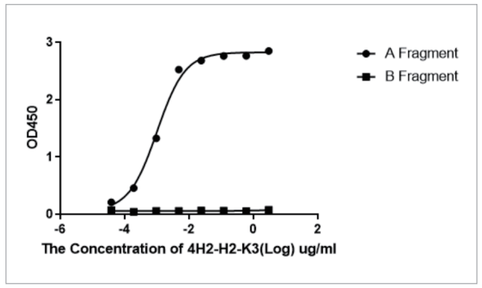
Rabbit monoclonal antibody discovery process

Service Specifications

Phase	TAT(Weeks)	Deliverables
Phase 0: Antigen preparation		
· Peptide/Protein preparation	3-4	/
Phase I: Animal immunization		
· Three immunizations with conventional method (three rabbits) & report only	6-8	ELISA report after the 3rd immunization
Phase II: B cell cloning and screening		
· One round of B cell cloning&report only	2	Positive clone report for up to 20 clones
Phase III:Sequencing, validation and recombinant antibody production		
· Antibody sequencing and validation	2	Antibody sequencing and alignment reports for up to 5 clones
· Small scale recombinant antibody production for five clones	3-4	0.1mg recombinant antibody/clone from up to 5 clones
· Optional: Antibody sequencing and small scale antibody production for one extra clone	/	Antibody sequencing and alignment report and 0.1mg recombinant antibody/clone
Phase IV: Recombinant Antibody production		
· Option1: Recombinant Antibody production	3	0.1-0.5mg/clone
· Option2: Recombinant Antibody production	4-6	1-2mg/clone

Case Study

Immunization Target: Immunization Target: target A and B protein fragments
Immunization Host: two rabbits
Solution: Successfully delivered the specific clones to recognize A and B fragments successfully after panning. The affinity could be reached to 39.6 pM and KD is at least 10E-11 for 1C11 clone.



Specific recognize A fragment (4H2-H2-K3 clone)

Immunization Target: Immunization Target: target C ELISA kit
Immunization Host: two rabbits
Solution: Successfully delivered 15 positive rabbit mAb clones by two rounds of B cell cloning method. The affinity and sensitivity of three clones 1H7, 2D5, 2G8 could be reached out for ELISA pairing testing, which were better than mouse mAb clones.

Coating Ab	Clone ID	EC50
1H7	2D5-Biotin	5.1 ng/ml
	2G8-Biotin	3.4 ng/ml

1H7&2D5, 1H7&2G8 mAbs are pairs

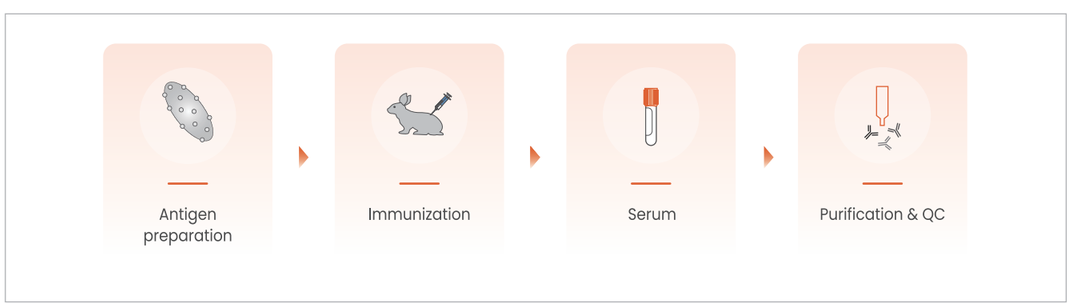
Polyclonal Antibody Discovery Service

Introduction

Smart Lifesciences comprehensive polyclonal antibody services include production of custom polyclonal antibodies in mouse, rabbit and other species. Smart Lifesciences provides one-stop solutions for your custom polyclonal antibody production, taking your project all the way from antigen design, peptide synthesis, and animal immunization, to antibody purification and QC with ELISA test.

Highlights

1. One stop solution
2. R&D carrier protein
3. High purification yield
4. High success rate



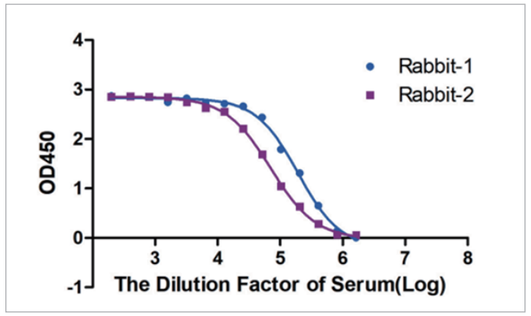
Polyclonal antibody discovery process

Service Specifications

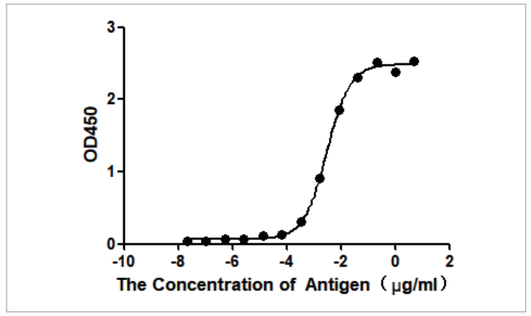
Phase	TAT(Weeks)	Deliverables
Phase 0: Antigen preparation		
Peptide/Protein preparation	3-4	/
Phase I: Animal immunization		
· Three immunizations with conventional method (two rabbits) & report only	6-8	ELISA report after the 3rd immunization
Phase II: Polyclonal antibody purification		
·Purification for all rabbits by antigen affinity column	2	Purified antibody from both rabbits and ELISA report

Case Study

Immunization Target: Immunization Target: target A protein antigen
Immunization Host: two rabbits
Solution: Successfully delivered the high affinity pAb to recognize A protein successfully. The affinity could be reached to pM and KD is at least 1.91E-10M.



ELISA data of anti-serum after 4th immunization



EC50 of purified pAb(KD is 1.91E-10M)

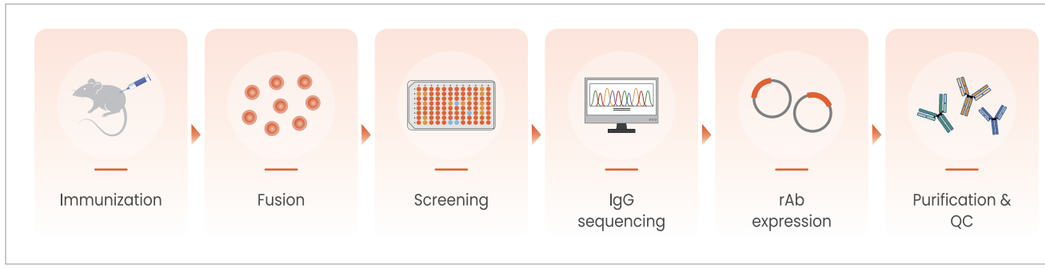
Mouse Monoclonal Antibody Discovery Service

Introduction

Smart Lifesciences's custom mouse monoclonal antibody development service provides a comprehensive solution for generating high-quality monoclonal antibodies against any target of interest. The service includes immunogen design and synthesis, immunization, hybridoma generation, screening, and antibody production.With Smart Lifesciences's fully customizable monoclonal antibody generation services, you have complete control over every stage of the process, allowing you to modify your approach, restart a phase, or terminate the project if necessary. Avoid the risks associated with a rigid protocol and choose our fully customizable service that provides the ultimate flexibility. Partnering with Smart Lifesciences's years of expertise in custom antibody development can help you achieve project success.

Highlights

1. Animal immunization (carrier protein to increase the anti-serum titer more than 20%, self-developed adjuvant).
2. Project success rate - 100%.
3. One stop solution - from gene to antibody.
4. Extensive experience - 13+ years.



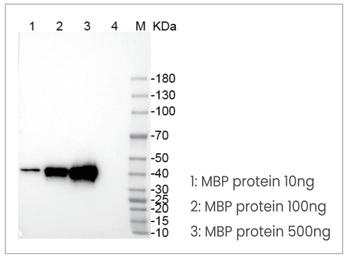
Mouse monoclonal antibody discovery process

Service Specifications

Phase	TAT(Weeks)	Deliverables
Phase 0: Antigen preparation		
· Peptide/Protein preparation	3-4	/
Phase I: Animal immunization		
· Three immunizations with conventional method (five mice)	6-8	ELISA report after the 3rd immunization
Phase II: Cell fusion and sub cloning screening		
· One cell fusion with up to 15 plates	5	Positive clone report for up to 10 clones
· Subcloning for 3-5 clones		2 vials of each sub-clonal hybridoma cell line from 3-5 positive primary cell lines
Phase III: Antibody production		
· Option 1: Antibody production in low IgG culture medium and protein A/G purification	3	0.1-0.5mg/clone
· Option2: Recombinant Antibody production	2-3	1-2mg/clone
· Option 3: Antibody sequencing and recombinant antibody production	3-4	Antibody sequencing alignment report and 0.1mg recombinant antibody/clone

Case Study

Immunization Target: Immunization Target: MBP protein antigen
Immunization Host: five mice
Solution: Successfully delivered more than 11 ELISA positive clones by one round of fusion operation and there have 6 WB positive clones after QC validation.



WB data of anti-MBP mouse mAb

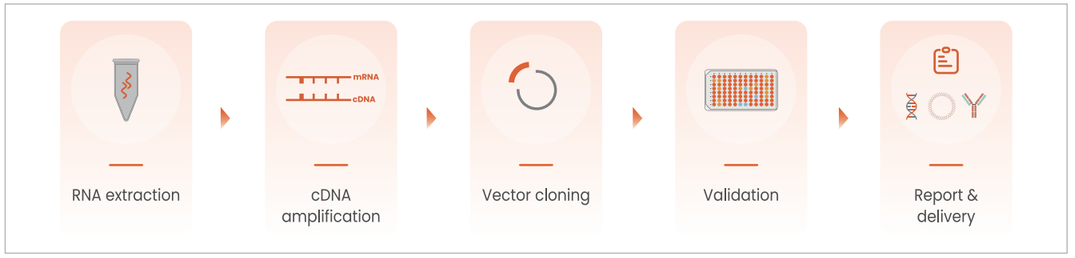
Antibody Sequencing Service

Introduction

Smart Lifesciences offers a fast and professional variable and full length sequencing service for customer's valuable monoclonal antibodies. We could sequence from multi species antibody producing cell line, which could be railored to requirements for various applications, including monoclonal antibody (mAb) engineering, functional optimization and drug development. So, in order to prevent the loss of genetic information, sequencing is a powerful tool for identifying antibodies produced by hybridoma cells.

Highlights

1. Project success rate - 100%.
2. One stop solution - from cell to recombinant antibody.
3. Multi species of B cells - mouse, rabbit, alpaca, human.



Hybridoma IgG sequencing process

HTP Antibody Production Service

Introduction

As the purification expert, Smart Lifesciences apply rapid purification platforms for the process from target gene to candidates by using HEK293 or CHO cells, both known for their efficiency and fast in recombinant protein expression. High throughput platform (HTP) offers the most cost-effective option for small-scale recombinant antibody production. For Smart Lifesciences's high throughput transient expression technology, which starting from customer-supplied sequences/plasminds to purified protein/antibody products, we could be completed in as short as 7 business days!

All the process could be finished automatically and high quality to help client achieve the goal efficiently for purified antibody products (e.g., IgGs, Fab, scFv, VHH, bi-specific antibodies, etc.) in quantities (i.e., from ug to mg). In order to ensure the high expression level, the automation equipment supporting the batch stability of our high throughput platform.

Highlights

1. Fast production starting at 7 BDs.
2. Protein expression&purification experience - 13+ years.
3. Successful projects delivered - 10,000+.
4. Expression success rate - 99%.

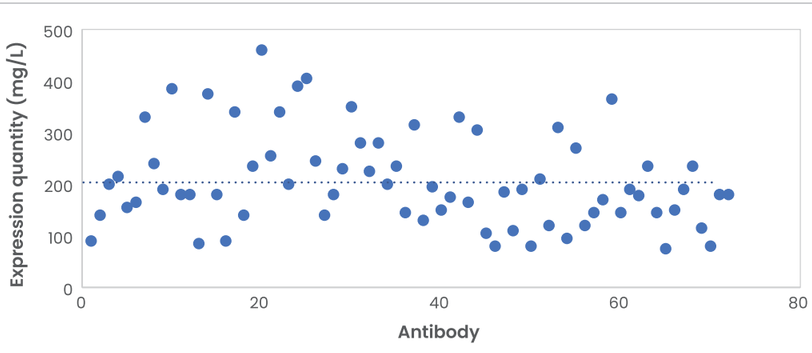
One-stop-shop recombinant antibody production proces

Service Specifications

Service Stpes	Timeline	Description
Target types	1-2 weeks	· Recombinant proteins · IgG, Bispecific, FabSc, Fv, VHH, Fc fusion, etc.
Gene synthesis & cloning		· Expression plasmids construction
Transient expression & purification		· Purified antibody (SDS-PAGE >95%, endotoxin level <1EU/mg, including SEC-HPLC report) · CoA report

Case Study

Abs expression (Data from IgG1 rAb)
Expression System: 293F **Expression Volume:** 5ml **SDS-PAGE Purity:** >95% **Average:** 203 mg/L



Large Scale Antibody Production Service

Introduction

Smart Lifesciences not only could provide the HTP&one stop solutions of antibody & protein manufacture services, but also could provide the customized services of protein manufacture & engineering. Especially, we could help to increase customer satisfaction and accomplish the target from the initiate lab R&D stage to industrial scale-up stage by the convenient and efficient methods with a timeline from gene synthesis to antibody delivery of just 10 business days!
The comprehensive antibody development platform provides researchers with stable quality and controllable cost antibody production.

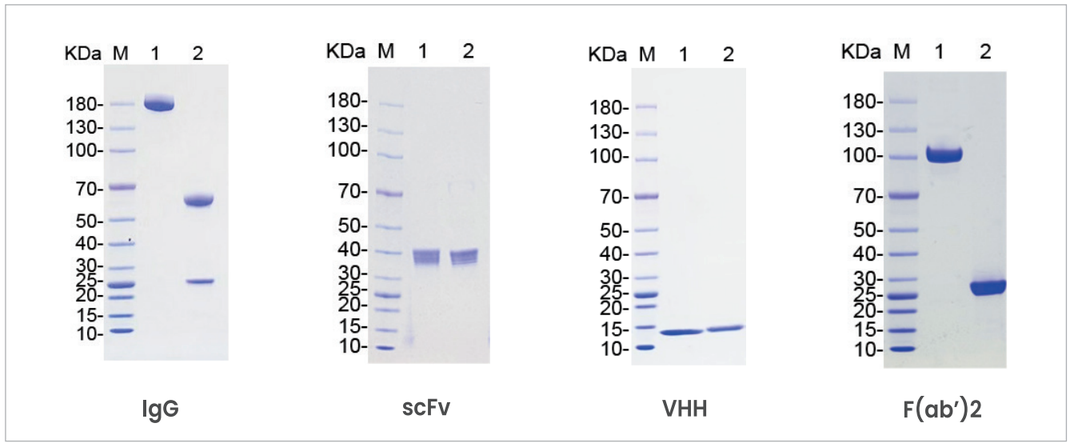
Highlights

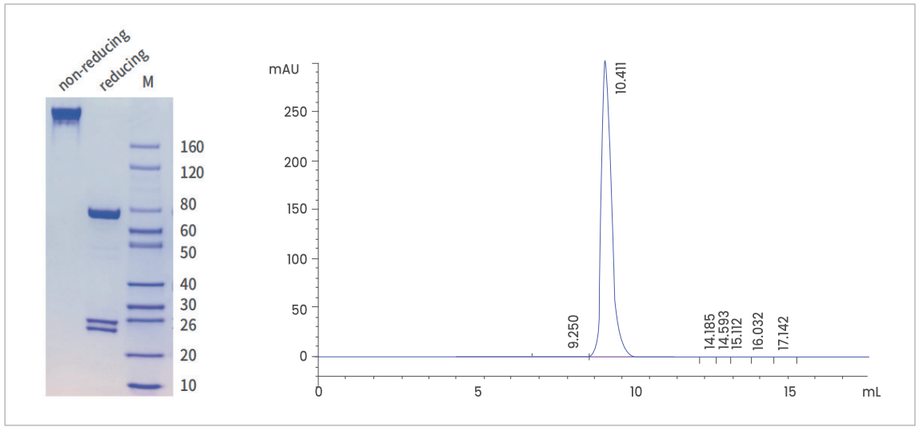
1. Fast turnaround time, starting at 10 BDs.
2. Protein expression&purification experience - 13+ years.
3. Successful projects delivered - 1,000+.
4. Expression success rate - 99%.

Service Specifications

Service Stpes	Timeline	Description
Target types	Transient expreesion: 3-4 weeks Stable expresion: 2-3 months	· Recombinant proteins · IgG, Bispecific, FabSc, Fv, VHH, Fc fusion, etc.
Gene synthesis & cloning		· Expression plasmids construction
Pilot study (Optional)		· Purified antibody (SDS-PAGE >95%, endotoxin level <1EU/mg, including SEC-HPLC report) · CoA report
Plasmind preparation, transient expression & purification		

Case Study





Experimental results			
Yield (mg/L)	SDS-PAGE (%)	HPLC (%)	Endotoxin (EU/mg)
200	>95%	97.82%	<1 EU/mg

Bi-specific antibody expression and purification

Protein Expression Services

· Bacterial Protein Expression Service

· Mammalian Transient Expression Service

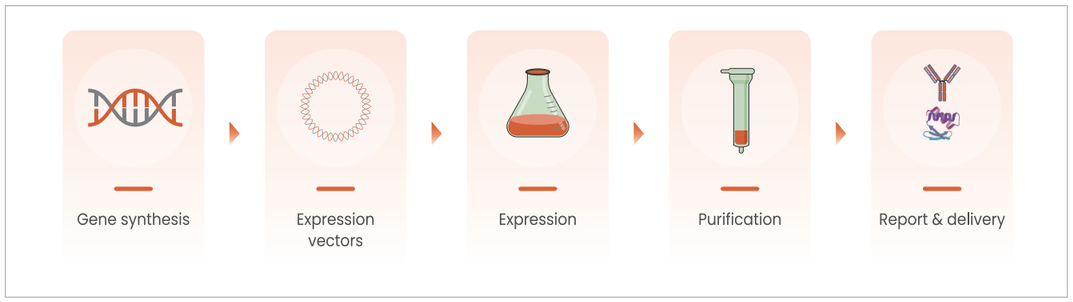
· Conjugation and Detection Service

Recombinant Protein Expression Service

Smart Lifesciences provides mammalian and bacterial recombinant protein expression services. Recombinant protein expression is a molecular technique used by model organisms such as bacteria, yeast, animal cells or plant cells to express exogenous gene proteins. We provide one-stop service, customized CRO solutionsv - from gene to product - accelerating your research and scientific discovery.

Protein expression system is a system consisting of a host, an exogenous gene, a carrier, and an auxiliary component. Through this system, exogenous genes can be expressed in the host. As a leading provider of a comprehensive suite of recombinant protein and antibody purification services across different expression systems, Smart Lifesciences seeks to partner with scientists worldwide to accelerate scientific discovery.

Our newly launched expression platform ensure the delivery of high-yield and purity products in a flexible, cost-effective manner in the least amount of time. To better align with the essential requirement of quality management for the development and manufacture of antibody and protein used for IVD medical devices, Smart Lifesciences has completed our registration to ISO 9001:2015 standard.



Recombinant protein expression process

Bacterial Protein Expression Service

Introduction

Smart Lifesciences provides recombinant protein expression in E. coli with efficient and cost-effective production. E. coli is a popular host option because of its high yield, low cost, and convenience of manipulation. The E. coli protein expression system is suitable for multiple species, acting as a principal tool for recombinant protein expression and Lifesciencesnological industrial development, especially for small protein production.

E. coli serves as an attractive host system due to its well-characterized genetic background, high yield capacity, robust production cycle, strong anti-pollution abilities, and ease of scaling. Sino Biological offers one-stop services for high-quality E. coli protein expression, with abundant experience in soluble protein expression and production and in protein refolding.

Highlights

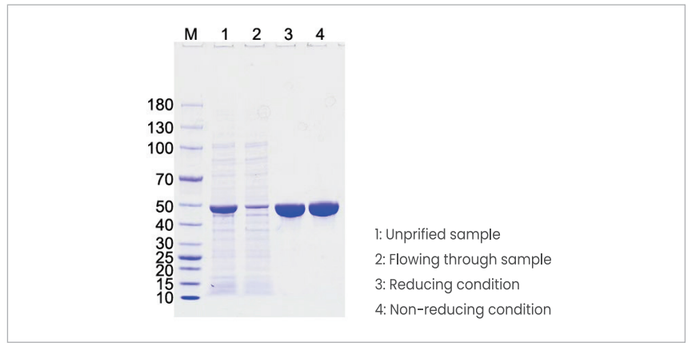
1. Fast turnaround time, starting at 10 BDs.
2. Protein expression&purification experience - 13+ years.
3. Successful projects delivered - 1,000+.
4. Expression success rate - 99%.

Service Specifications

Service Stpes	Timeline	Description
Gene synthesis & cloning	Transient expreesion: 3-4 weeks	· Expression plasmids construction
Pilot study (Optional)		· Purified protein (SDS-PAGE >95%, endotoxin level <1EU/mg, including SEC-HPLC report)
Plasmind preparation, transient expression & purification		· CoA report

Case Study

Protein Name: His sumo-BHFR
Prification Method: Ni column
Expression Host: E.coli
Yield: 60 mg/L
SDS-PAGE Purity: >95%



SDS PAGE Analysis

Mammalian Transient Expression Service

Introduction

Smart Lifesciences provides mammalian recombinant protein expression services for the different scalable production of proteins. Expecially, the mammalian system is ideal for protein expression of human or other mammalian proteins for proper folding and appropriate post-translational modifications, which support customers developing scientific research, diagnostic assays and research grage proteins.

Our flexibility plaforms helps customers to match the requiring large volume scale-up. We will advice the suitable proposal according to our platform advantages and the request requirements to help customers accomplish the targets, we also will provide the one on one professional and customized service, which will also include the final products, detection reports.

Highlights

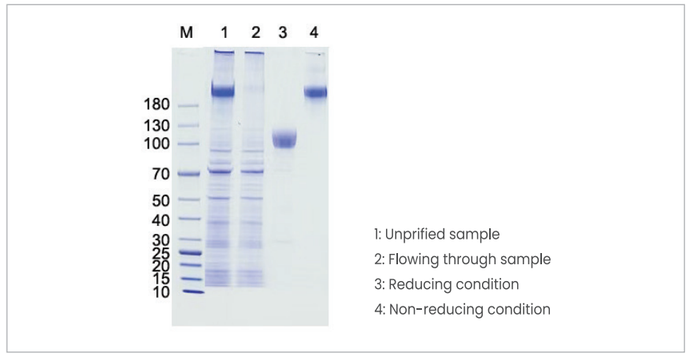
1. Fast turnaround time, starting at 10 BDs.
2. Protein expression&purification experience - 13+ years.
3. Successful projects delivered - 1,000+.
4. Expression success rate - 99%.

Service Specifications

Service Stpes	Timeline	Description
Gene synthesis & cloning	Transient expreesion: 3-4 weeks	· Expression plasmids construction
Pilot study (Optional)		· Purified Protein (SDS-PAGE >95%, endotoxin level <1EU/mg, including SEC-HPLC report) · CoA report
Plasmind preparation, transient expression & purification		

Case Study

Protein Name: TKRA-Fc/His
Prification Method: Ni column
Expression Host: CHO-K1
Yield: 300 mg/L
SDS-PAGE Purity: >95%



SDS PAGE Analysis

Specialized Antibody Services - Conjugation and Detection

Introduction

Smart Lifesciences offers specialized antibody services including antibody modification & purification services, and cell line services as well as other antibody services. These specialized antibody services can be further tailored to meet your customize projects and needs.

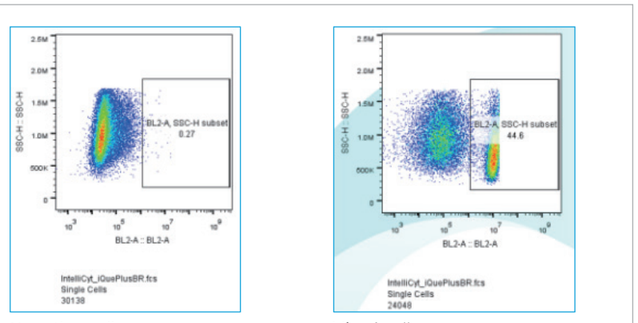
Antibody Labeling

Antibody biotinylation offers the interchangeability of your choice of labeled avidin, while HRP or fluorescent conjugation provide for simplified direct detection. Either antibody conjugation or labeling service prepares your antibody for both visualization and quantitation of the target molecule.

Antibody Detection

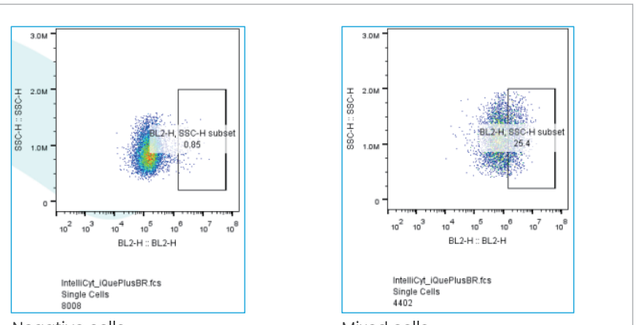
Finally, we offer a wide array of options for antibody detection, such as ELISA, HPLC and FACS. Our antibody detection services offer options to detect any antibody quickly and efficiently.

Case Studies - Abs conjugation



Negative cells Mixed cells

FACS result of PE labeling antibody



Negative cells Mixed cells

FACS result of APC labeling antibody

AAV & LV Packaging Services

· AAV Packaging Service

· LV Packaging Service

· Stable Cell Line Service

· Plasmind Cloning and Preparation Service

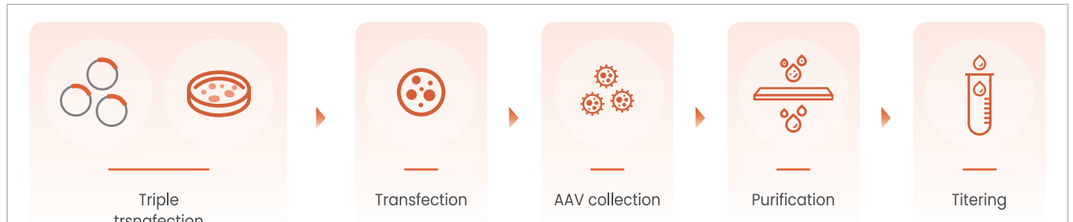
AAV Packaging Service

Introduction

Adeno-associated virus (AAV) is a popular, single-stranded DNA virus that has emerged as an exceptional research tool and leading candidate for genetic payload delivery in gene and cell therapy applications. Several features make AAV the preferred vector for both academic and industry researchers.

Highlights

1. Delivery in as little as 12 days from miniprep to purified AAV virus.
2. High purity, low endotoxin levels and minimal empty capsids for reliable performance.
3. Maghabour AAV Purification Kit product for high quality AAV.



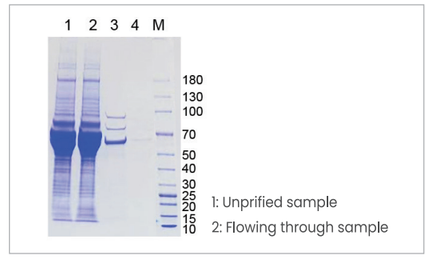
Recombinant AAV packaging process

Service Specifications

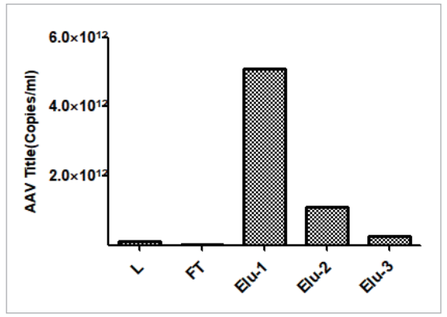
Service Stpes	Timeline	Description
Gene synthesis & cloning	3-6 weeks	· Plasmind contruction
AAV packaging & purification		· Cotransfection and packing cell line
Titering		· Concentration and purification · CoA report (SDS-PAGE, qPCR, titering)

Case Studies - AAV Packaging Service

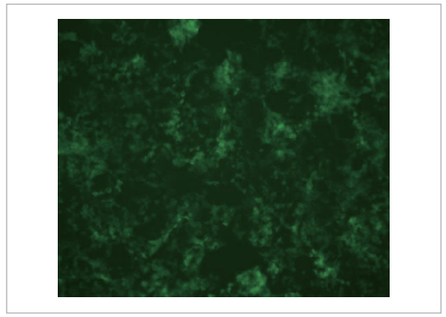
Co-transfect with transfer, packaging and helper plasminds for AAV packaging, collect and purify rAAV virus by Maghabour AAV Purification Kit. QC detection by SDS-PAGE, qPCR and FACS for titer and infectivity determination.



SDS-PAGE data (purity≥95%)

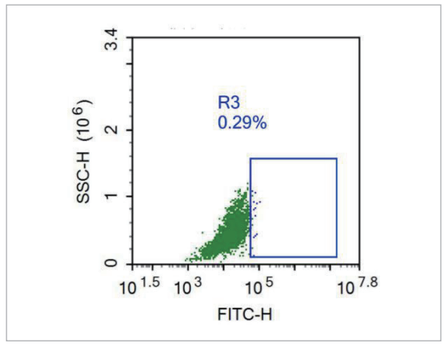


qPCR data (Viral copy number≥5×10^12/ml)

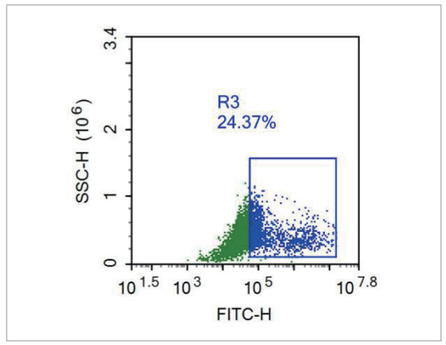


IF data after AAV infection

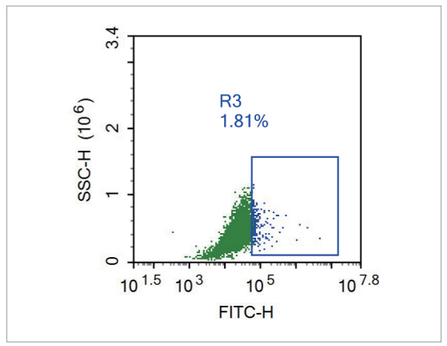
Dilute the AAV unpurified sample and purified samples by a factor of two and five to FACS detection of GFP. After Maghabour AAV Purification Kit purification the purifed virus retains a high level of infectivity.



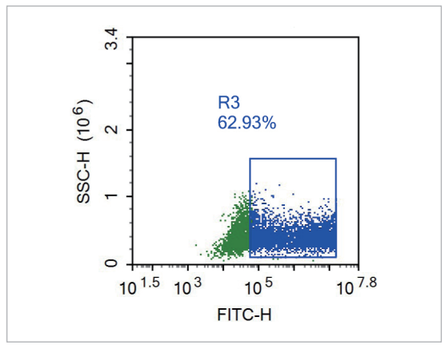
293 - Negative control



Unpurified sample with two dilution



Flowing through sample with two dilution



Elution sample with two dilution

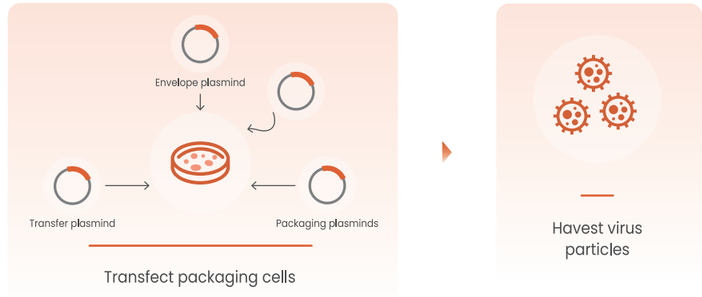
LV Packaging Service

Introduction

Recombinant lentivirus(LV) is an enveloped retrovirus with a single-stranded RNA genome, which is widely used for efficient gene delivery into mammalian cells. Smart Lifesciences's current recombinant lentivectors are derived from human immunodeficiency virus-1 (HIV-1) and delivers high quality and high titer LV for overexpression, knockdown and knockout applications.

Highlights

1. Fast turnaround.
2. High purity, low endotoxin levels and minimal empty capsids for reliable performance.
3. One stop solution for downstream stable cell line development.



Stable Cell Line Service

Introduction

Stable cell line development could express exogenous genes constitutively, which is an important part for life science research and manufacture. At Smart Lifesciences, we recognize that having strong cell engineering capabilities is critical to support customer's research. In order to provides the one stop solution from, our experts as well as accompanying technical expertise to help meet customers' project needs.

Highlights

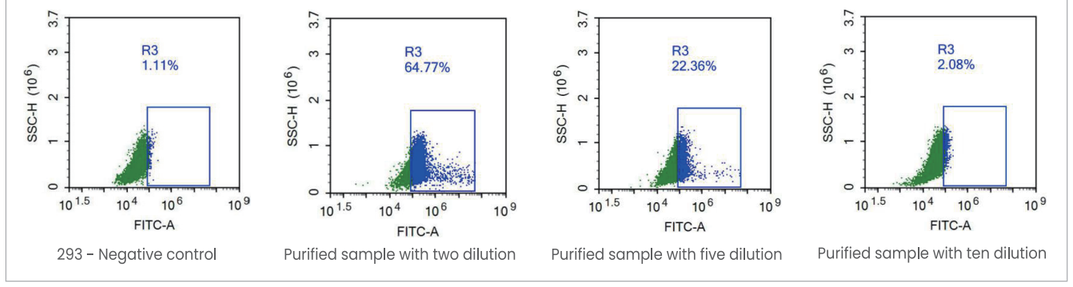
1. One stop solution.
2. Extensive experience - 13+ years.
3. Project success rate - 98%.

Service Specifications

Service Stpes	Timeline	Description
Gene synthesis & cloning	7-11 weeks	· Plasmind contruction
LV packaging & purification		· Cotransfection and packing cell line
Titering detection		· Concentration and purification · Titering QC
Stable cell line contruction		· Virus infection and pressure screening
Cell line detection		· FACS detection of positive results for the cell line and passaging stability

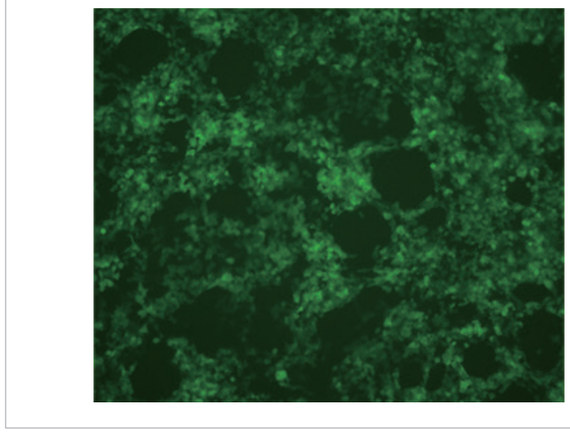
Case Studies - LV Packaging Service

Co-transfect with transfer, packaging and helper plasminds for LV packaging, collect and purify rAAV virus by PEG method. QC detection by FACS for titer and infectivity determination.



293 - Negative control | Purified sample with two dilution | Purified sample with five dilution | Purified sample with ten dilution

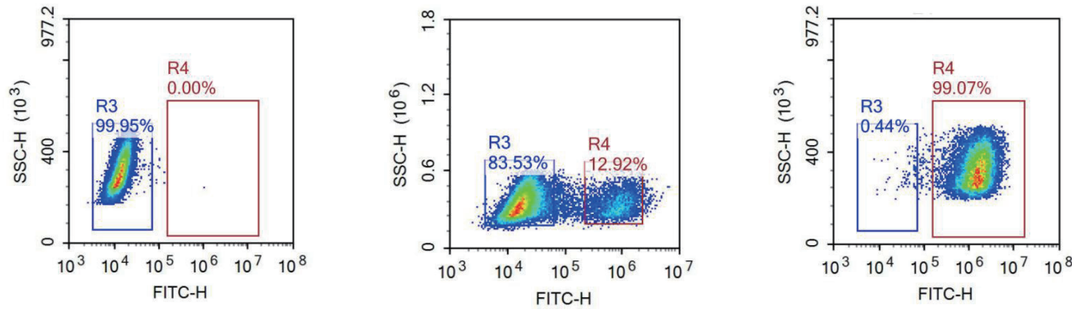
Titer of purified LV virus ≥4×10^8TU/ml



IF data after LV infection (293 cell)

Case Studies - Stable cell line service

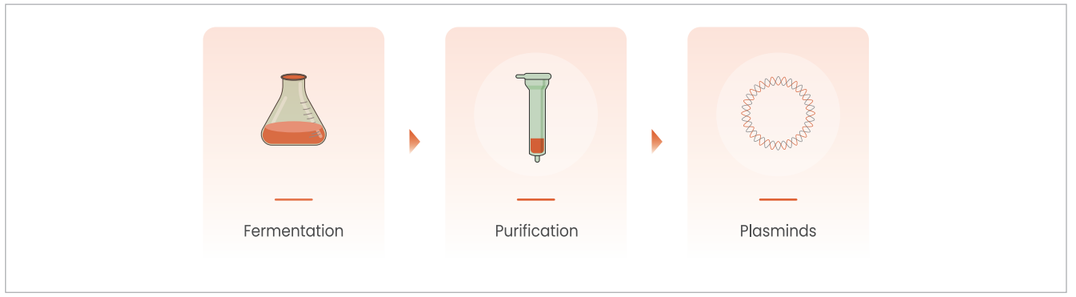
Constructing the stable cell line by using LV packing method to obtain the stable cell line with only two weeks and the positive rate more than 99%.



Plasmid Cloning and Preparation Service

Introduction

Smart Lifesciences has extensive experience in plasmid DNA production and development, delivering high-quality plasmid preparation services tailored to meet customer needs. Our expertise also extends to patented AAV and LVV helper and packaging plasmids, plasmid cloning and expression, and CRISPR plasmids for precise gene editing.



Plasmind cloning and preparation process