

For rapid discovery of high-affinity antibody

Phage Display Screening



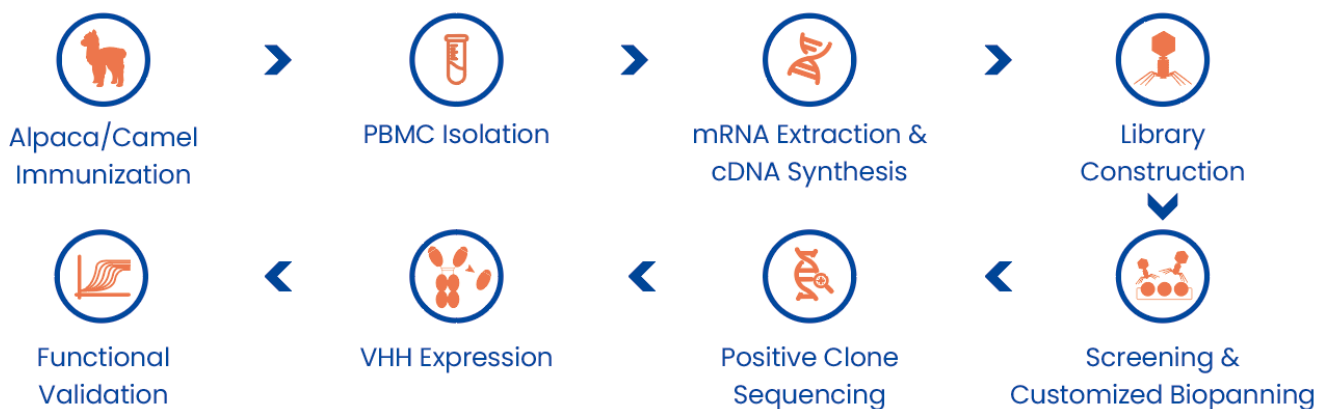
At Tsingke Biotech, we deliver high-performance phage display antibody screening powered by both naïve and immune libraries. Our naïve human library enables rapid access to fully human antibodies for therapeutic development, while our immune libraries, built through advanced multi-animal immunization, provide exceptional diversity for nanobody and antibody discovery. With upgraded phage display technology and versatile panning strategies—solid, liquid, or cell-based—we accelerate the discovery of unique, high-affinity antibody candidates with superior precision and efficiency.

Naïve Library

- Extremely large, diverse human libraries (scFv $>1 \times 10^{12}$ cfu, Fab $> 1 \times 10^{11}$ cfu, sdFv $> 5 \times 10^{11}$ cfu, from 100 donors)
- VHH $> 5 \times 10^{11}$ cfu from 200 camels
- Flexible antibody formats & sequence data provided
- Rapid turnaround from 2 weeks

Immune Library

- Simultaneous immunization of two animals to boost nanobody diversity
- Optimized phage display to maximizes efficiency while maintaining diversity
- Multiple screening methods: solid-phase, liquid-phase, cell-based panning
- Immune library with capacity up to 10^9 cfu



VHH Nanobody Discovery Workflow

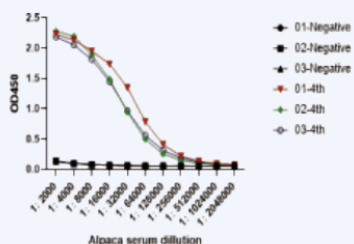
VHH Antibody Discovery Service

Service Step	Service Detail	Timeline	Deliverables
Antigen preparation (by client or prepared in-house)	Target review & antigen preparation	1-3 week (s)	(1) Serum from immunized animals (2) PBMC (3) Immune library (4) Target-specific antibody sequences (5) Experimental report
Camel/Alpaca immunization and PBMC isolation & preservation	Animal immunization/Titer evaluation/ PBMC isolation & preservation	7-8 weeks	
VHH Phage Library Construction	VHH amplification/ Plasmid library construction /Phage display library construction	1-2 week (s)	
Panning	Solid-phase / Liquid-phase panning		
Screening for positive clones	ELISA validation of positive clones		
Sequencing	Sanger sequencing / NGS		
Recombinant antibody expression & validation	Recombinant antibody expression + ELISA / BLI	2 weeks	
Turnaround Time	11-15 weeks		

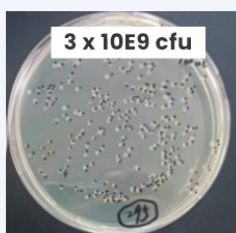
*If the antigen is provided, the process can be completed in as little as 8 weeks

Case Study

Recombinant AI-immunized alpaca for VHH library construction

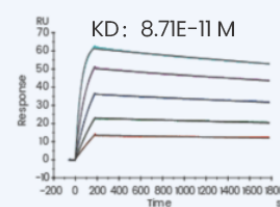
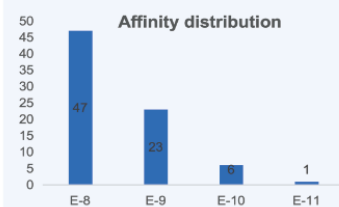


The serum titer of the alpaca after four immunizations reached over 128k



Library size up to 3×10^9 cfu

Validation of VHHs affinity with recombinant protein A1



Affinity range 1×10^{-8} M to 8.71×10^{-11} M