Abnova NanoAb™ Service

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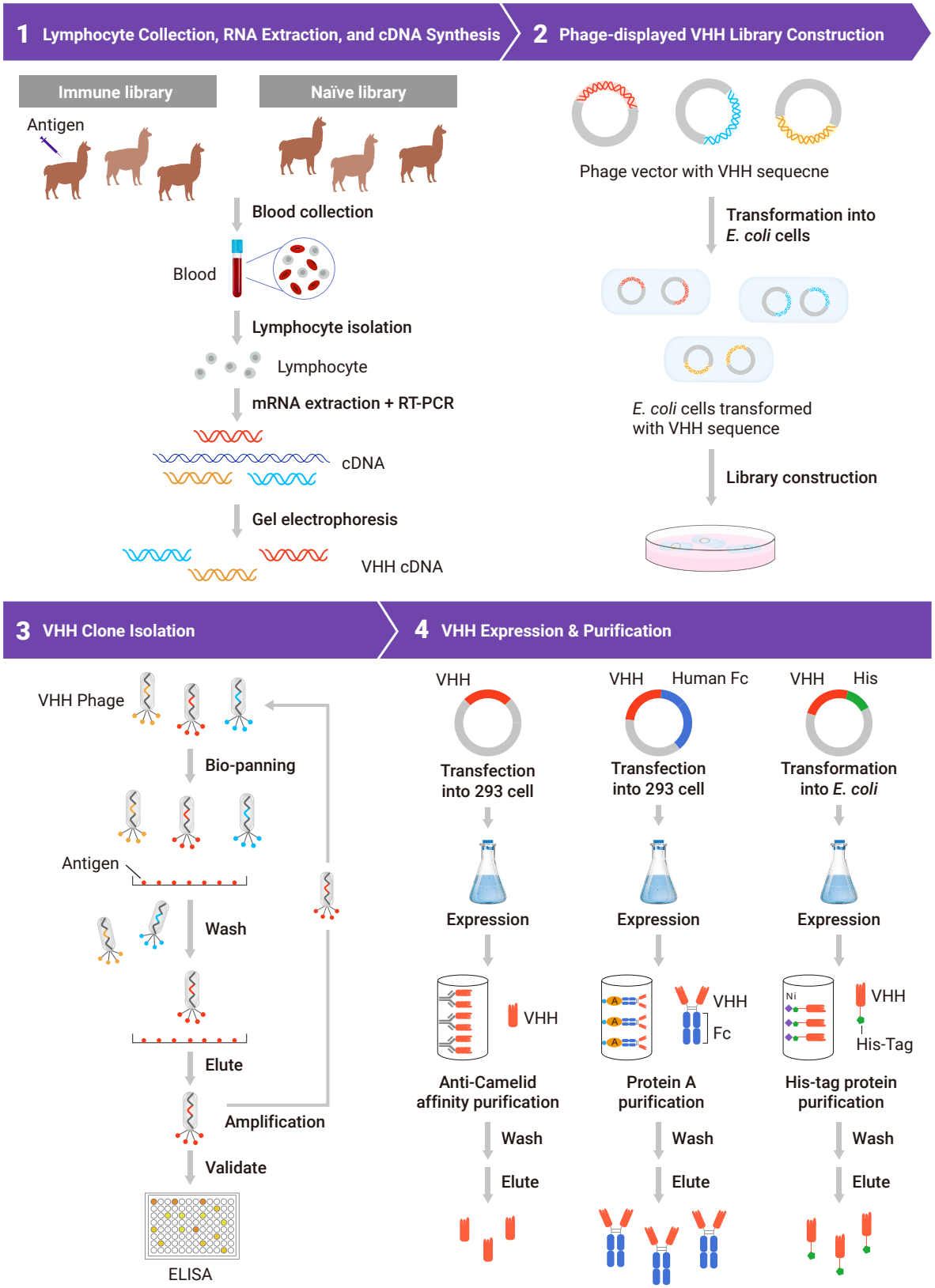
Abnova

VHH antibody, also known as Camelid single domain antibody (sdAb), is the recombinant variable domain derived from camelid heavy-chain-only antibody. This configuration confers a number of unique properties. The small size and high stability of VHH antibody make it a promising tool for disease diagnosis and treatment. VHH antibody can penetrate tissue more easily and target difficult epitopes hidden in the protein structure. Additionally, VHH antibody expresses well in many host systems, making it cost-effective for large-scale manufacturing.

Abnova offers the NanoAb™ service for the production of target-specific VHH antibodies from the camelid VHH library. Using advanced camelid VHH library screening technology, we screen the library and isolate the VHH clones for your required antigens. Positive clones are sequenced and validated by ELISA. The selected clones will then be introduced into the HEK293 expression vector or *E. coli* expression vector for transient and scalable VHH antibody production, suitable for many downstream applications.

NanoAb™ Workflow



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Specification

	Naïve Camelid VHH Library	Immune Library
Library Size	1.2 x 10^{12}	1.2 x 10^{13}
Required Screening Antigen Amount	0.6 mg	3.5 mg
Lead Time	8-10 weeks	22-24 weeks
Deliverables	1. Phage validation through phage ELISA data 2. Up to 5 different VHH sequences 3. Up to 1 purified VHH, approximately 0.2 mg per VHH	1. cDNA 150ug 2. VHH library 3-5ml 3. Phage validation through phage ELISA data 4. Up to 8 different VHH sequences 5. Up to 1 purified VHH, approximately 0.2 mg per VHH

Advantages

- Small Size
- Superior Stability
- Low Immunogenicity
- High Affinity and Specificity
- Fast Blood Clearance
- Versatile Production
- Easy Multimerization (Multivalency/Multiparatopicity/Multispecificity)
- Easy Conjugation
- Robustness in Bioengineering
- Applications Across Fields

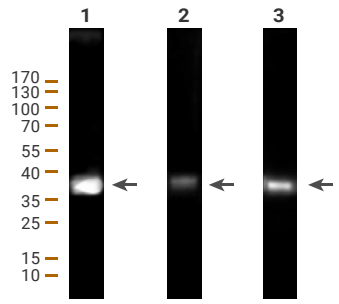
VHH Antibody vs. Conventional Mab and Pab

	VHH Antibody	Mab	Pab
Size	12 - 15 kD	Approximately 150 kD	Approximately 150 kD
Required Antigen Amount	≦1 mg	≦4 mg	≦4 mg
Method	Camelid VHH library screening	Hybridoma technology	Harvested in antiserum
Stability	High stability to heat, pH and denaturing agents	Thermal instability	Biological instability
Lot-to-Lot Consistency	Very high	High	Low
Lead Time	8-24 weeks	16-24 weeks	4-12 weeks

Examples

Customized CD8A VHH-hIgG1 Humanized Monoclonal Antibodies

Western Blot



Western blot analysis for CD8A His fusion recombinant protein.

Lane 1: Mouse anti-His monoclonal antibody

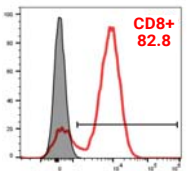
Lane 2: CD8A VHH-hIgG1 humanized monoclonal antibody, clone A1, Catalog # RAB01120-M01J

Lane 3: CD8A VHH-hIgG1 humanized monoclonal antibody, clone B5, Catalog # RAB01120-M03J

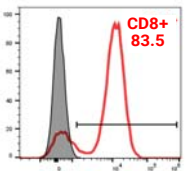
Flow Cytometry

A

Flow cytometry analysis of enriched human CD3 T cells from bladder cancer patient, serving as the positive control, were treated with CD8A VHH-hIgG1 humanized monoclonal antibody.



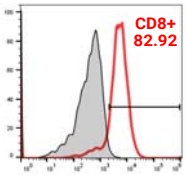
CD8A VHH-hIgG1 humanized monoclonal antibody, clone A1 Catalog # RAB01120-M01J



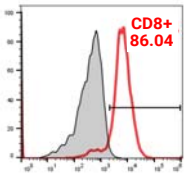
CD8A VHH-hIgG1 humanized monoclonal antibody, clone B5 Catalog # RAB01120-M03J

B

Flow cytometry analysis of enriched human CD3 T cells from healthy person, serving as the positive control, were treated with CD8A VHH-hIgG1 humanized monoclonal antibody.



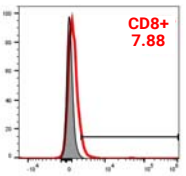
CD8A VHH-hIgG1 humanized monoclonal antibody, clone A1 Catalog # RAB01120-M01J



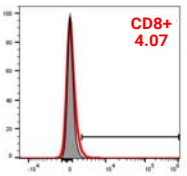
CD8A VHH-hIgG1 humanized monoclonal antibody, clone B5 Catalog # RAB01120-M03J

C

Flow cytometry analysis of 293 cells, serving as the negative control, were treated with CD8A VHH-hIgG1 humanized monoclonal antibody.



CD8A VHH-hIgG1 humanized monoclonal antibody, clone A1 Catalog # RAB01120-M01J



CD8A VHH-hIgG1 humanized monoclonal antibody, clone B5 Catalog # RAB01120-M03J

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