Jackson ImmunoResearch LABORATORIES, INC.

INTRODUCING NEW

Secondary™ Tools
For VHH Discovery

OPTIMIZE VHH ANTIBODY DEVELOPMENT

JIR presents Anti-Alpaca IgG, Subclass and VHH domain secondary antibodies to optimize VHH (single domain) antibody development and application.

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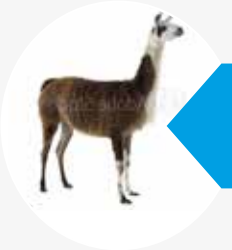
Secondary™ Tools For VHH Discovery



Immunize Alpaca/ Llama

Harvest Lymphocytes at optimal time

Amplify VHH genes

Create and screen VHH library

Express and purify VHH hits

Validate VHH activity

The pathway to recombinant VHH antibody development

The development of high affinity VHH antibodies follows the well-established pathway shown. JIR Anti-Alpaca antibodies can be utilized at specific stages to expedite and enhance the development of high affinity VHH antibodies.

The success and speed of discovering high quality VHH candidates is optimized by the fidelity and utility of the tools used at each step.

bsi. ISO 9001:2015 Quality Management

Jackson ImmunoResearch Laboratories Inc. is certified by BSI to ISO 9001:2015 under certificate number FM 545248.

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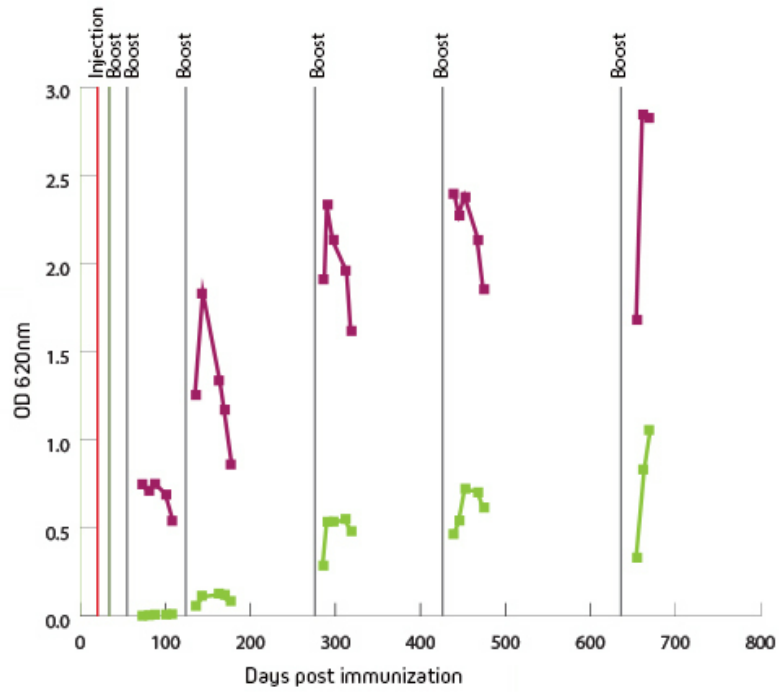
Monitor IgG 2+3 subclass titer to ideally time PBMC harvest

Use JIR Anti-Alpaca IgG, subclasses 2+3 to time PBMC harvest for VHH library construction. The VHH domain is located on these subclasses only. Subclass 2+3 response may mature differently from total IgG, and monitoring serum conversion of these antibodies can inform the decision to harvest PBMCs.
Timing PBMC harvest based on total IgG titer might suggest a collection point at 150 days, but the IgG 2+3 response was not maximal until after 300 days post immunization.

This ELISA data shows the antibody subclass repertoire in response to the immunogen over time. Antiserum was used to detect the coated immunogen, and peroxidase-conjugated secondary antibodies were used to compare total IgG to IgG subclasses 2+3.



Key

Total IgG

Goat Anti-Alpaca IgG (H+L) (min X Bov, Hu, Ms, Rb, Rat Sr Prot)
128-035-160

IgG 2+3

Goat Anti-Alpaca IgG, subclasses 2+3 specific (min X Bov, Hu, Ms, Rb, Rat Sr Prot)
128-035-229

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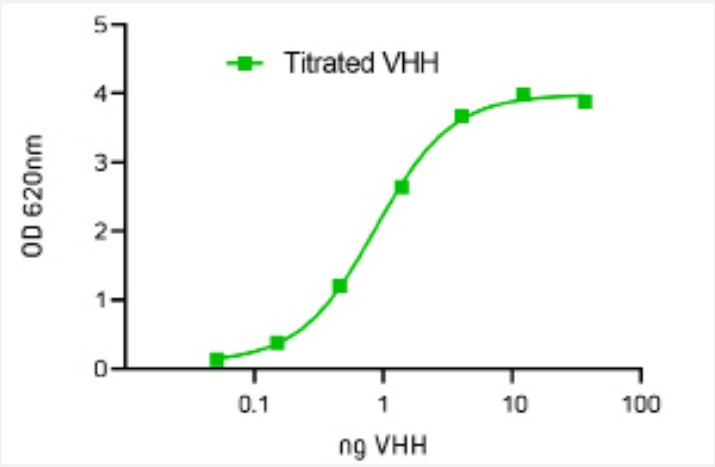
Enhance detection of VHH antibodies using Goat Anti-Alpaca IgG, VHH domain

Anti-Alpaca IgG, VHH domain antibodies show amplified signal compared to an anti-tag antibody.

Polyclonal antibodies that broadly recognize many epitopes on VHH deliver additional signaling molecules (e.g. fluorophores or enzymes) vs. antibodies narrowly focused on small peptide sequences. In this figure, a His6 tagged recombinant VHH was detected by western blot using Goat Anti-VHH domain antibody or an anti-His6 antibody.

Test for VHH expression and binding activity with greater confidence



Screening VHH-expressing clones for solubility and binding activity is commonly done by ELISA. Significant signal can be obtained even at low VHH concentrations. In this panel, VHH was titrated across its coated immunogen and detected with Peroxidase conjugated Goat Anti-Alpaca VHH domain antibody.

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Anti-Alpaca IgG Secondary Antibodies

JIR's Anti-Alpaca antibodies recognize both alpaca and llama IgG (H+L), subclasses 2+3, or VHH domain.

AffiniPure Secondary Antibodies	Product Code
Goat Anti-Alpaca IgG (H+L)*	128-005-003
Goat Anti-Alpaca IgG (H+L) (min X Bov, Hu, Ms, Rb, Rat Sr Prot)*	128-005-160
Goat Anti-Alpaca IgG, subclasses 2+3 specific (min X Bov, Hu, Ms, Rb, Rat Sr Prot)*	128-005-229
Goat Anti-Alpaca IgG, VHH domain (min X Bov Sr Prot)	128-005-232
Goat Anti-Alpaca IgG, VHH domain (min X Bov, Hu, Ms, Rb, Rat Sr Prot)	128-005-230

*These antibodies react primarily with the Fc region, and are not recommended for detection of VHH antibodies.

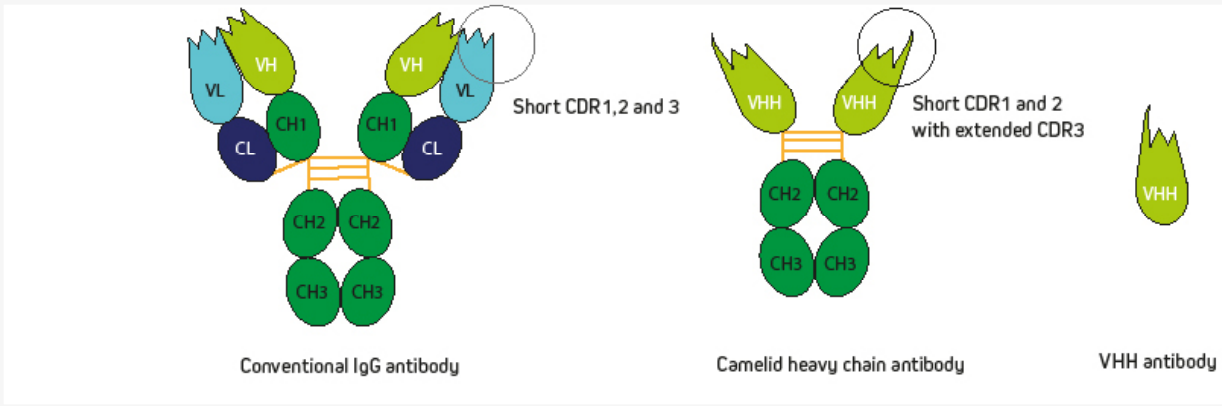
Available in a wide range of conjugate options including...

Horseradish Peroxidase	DyLight™ 405	Cy™ 3	Alexa Fluor® 594
Alkaline Phosphatase	Alexa Fluor® 488	R-Phycoerythrin (R-PE)	Alexa Fluor® 647
Biotin-SP	Fluorescein (FITC)	Rhodamine Red™-X	Cy™ 5

Heavy chain only antibodies

Antibodies derived from camelid species such as alpaca and llama have unique qualities that have been exploited for creation of engineered antibodies. Since the first isolation of heavy chain antibodies from camel in 1989, researchers have focused on the 12-15 kDa antigen-binding VHH domain as a model for recombinant antibody (commonly called nanobody†) production. Several distinguishing characteristics of VHH antibodies are their ability to cross the blood-brain barrier and access other remote locations, and to bind antigen tightly through a long CDR3 loop.

Other advantages of VHH antibodies are that they are easy to clone and produce at high levels in recombinant systems, are stable to heat and pH extremes, and are generally quite soluble. Given their unique properties, VHH antibodies are being used in a variety of applications including diagnostic kits to detect small molecules, as biosensors and in numerous medical applications such as cancer treatment. VHH antibodies are powerful tools for discovery.



SPECIALIZING IN

Secondary **Antibodies and Conjugates**

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