

//05 **Anti-llama secondary antibodies**

V_HHs can be detected using a rabbit anti-V_HH polyclonal Ab which is broad V_HH-specific, as it binds to and allows for the detection of V_HHs from different germline sequence families. Custom labeling is available on request.

PRODUCT NAME	SIZE	#CAT
Rabbit anti-Llama V _H H, pAb	25 µg	EG-VHH001-0025
	100 µg	EG-VHH001-0100
	250 µg	EG-VHH001-0250

Order on www.eurogentec.com

//06 **Confidentiality**

We ensure that your project and your data will be handled under full confidentiality and will never be shared with external parties. Non-disclosure agreements can be executed.

//07 **Support form discovery to commercialization**

We produce antibodies for applications ranging from the initial discovery phase to the final commercial use. Our team of antibody experts is dedicated to supporting you throughout every stage of your project, providing valuable advice and keeping you informed about the manufacturing process's progress.

//08 **Animal welfare**

Animal housing and immunizations are exclusively performed in Belgium. Animal welfare is one of our major concerns and as such, our animal facilities fully respect the sternest ethical legislations in force. Our quality management system is ISO 9001 certified and our animal facilities comply with the following association's requirements :

- Federation of European laboratory animal science associations (FELASA)
- UK home office animals scientific procedures act

Each animal is selected with the highest vigilance and identified to guarantee traceability. At any time, experts can visit our facilities and audits can be organized.

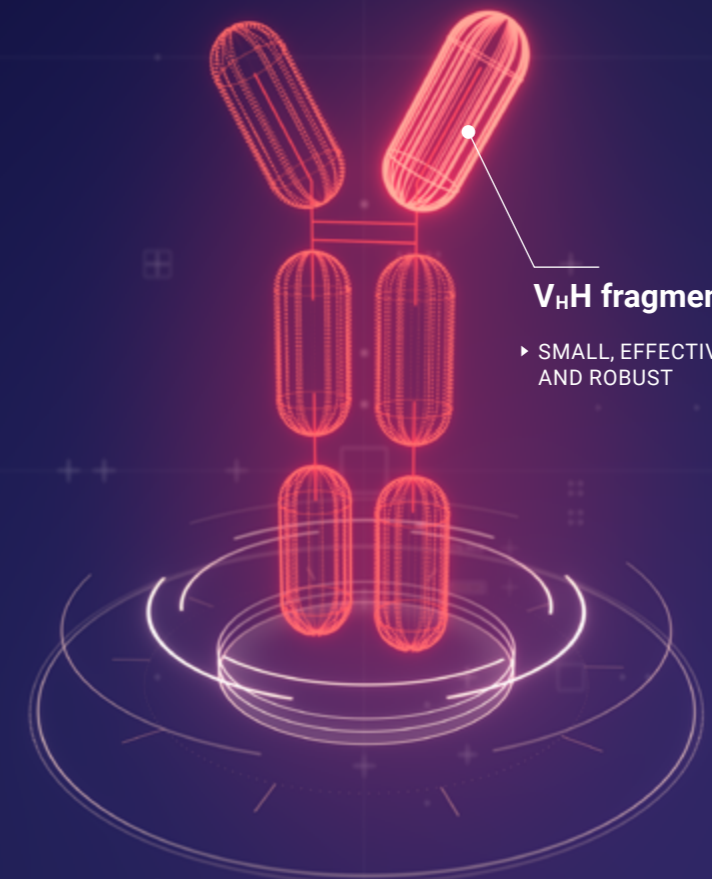
RES-EN-FLY-Llama-VHH-antibodies-A4-Aug2023-V3

CONTACT OUR SPECIALISTS
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MORE INFO ON
www.eurogentec.com

CAMELID ANTIBODIES AND V_HH FRAGMENTS

We shape your single chain antibodies



OUR PRODUCTS

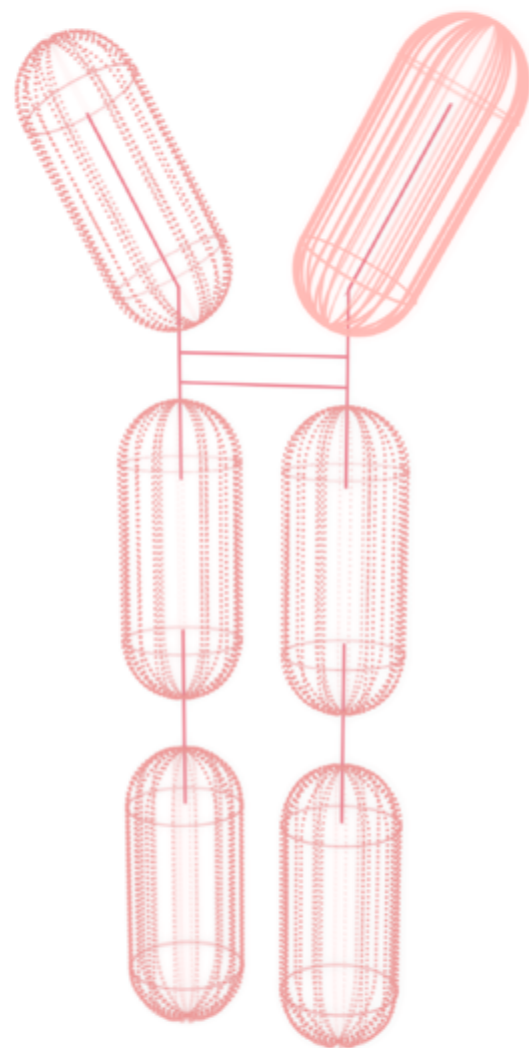
The largest range related to llama antibodies

V _H H FRAGMENT	POLYCLONAL	PARENT RNA	LABELING	SECONDARY ANTIBODY

[+]

Properties and production of camelid antibodies and V_HH fragments

Besides producing conventional immunoglobulins (IgGs), llamas and other camelids also produce heavy chain-only antibodies, also named single-chain Abs or heavy-chain Abs (HcAbs). They are composed of two heavy chains and no light chains or CH1 domains.



//01 Single chain antibodies

Immunoglobulins from camelids are sub-classified as IgG1, IgG2 and IgG3. Only IgG2 and IgG3 are single-chain Abs differing by the size of their hinge region.

Compared to the ~ 150 kDa IgG1, HcAbs have a relatively smaller size of 90-100 kDa and a simpler structure. Accordingly, they offer a much easier manipulation and a higher stability. They bind antigens at higher temperatures and under more stringent denaturing conditions.

//02 V_HH fragments

The V_HH is the smallest naturally occurring antigen binding domain. It is usually obtained by the phage display method. An appropriate screening ensures the selection of the best V_HH fragments.

On the contrary, when developing mAbs using the traditional hybridoma method, only a limited number of hybridomas can be obtained from immunized hosts, which highly limits the chances of obtaining the best antibody producing clone.

//02.1 V_HH : small Ab fragment with considerable benefits



BETTER TARGETING

Due to their small size (~15kDa), V_HH antibody fragments can bind epitopes that are hidden, so the targeting precision is higher compared to normal antibodies.



EASIER PRODUCTION

Because they are composed of a unique polypeptide chain, V_HH are very easy to produce in lower eukaryotes. Large amounts and high purities can be achieved, Based on a deep expertise in the field, one can engineer more stable V_HH, or increase their production yield.



UNIQUE PROPERTIES

V_HH have a high tissue penetration and are cleared from circulation rapidly. Some V_HH can even cross the blood-brain barrier.



HIGHER STABILITY

V_HH are stable under extreme pH, temperature and against proteases; hence, they keep their native folding and epitope binding capacity under very diverse experimental conditions.

//03 Antibody Program step by step

//03.1 Eurogentec produces high affinity monoclonal V_HH

01

IMMUNIZATION

STEP

Host: Llama and Alpaca • **Program:** customer dependent; lasts from 5 to 10 weeks.
 • **Antigen:** provided by the customer or produced at Eurogentec. Protein amount requirement per immunization: 0.5 mg/ llama. • **Testing of immune response (optional):** ELISA testing against the antigens generally performed. Step requiring additional amount of antigen.

DELIVERABLE

Serum containing unpurified polyclonal antibodies.

02

RNA ISOLATION

STEP

RNA extraction from lymphocytes (isolated from ~ 250ml blood sample).

DELIVERABLE

RNA

03

LIBRARY CONSTRUCTION

STEP

Library construction for phage display.

DELIVERABLE

Two libraries with size >10⁷ different clones and > 90% insert.

04

SELECTION AND SCREENING

STEP

Selection and screening for high affinity V_HH clones and sequence determination.

DELIVERABLE

2 selected families with each 6 binders sequences.

05

PRODUCTION

STEP

V_HH single domain antibody production and purification.

DELIVERABLE

0.5 mg protein of the lead clones produced *E.coli* and purified (<90%).
 Option : We can produce small to large scale GMP grade V_HH from the selected clone.

//04 Additional services [+]

- Large scale production of V_HH in bacteria/yeast for *in vitro* or animal experiments up to GMP production for microdosing studies in human.
- Optimization of V_HH sequence for production, physical and "in product" stability and various types of clinical use.

- Formatting of the V_HH in bivalent, bispecific or custom made formats.
- Humanization of camelid V_HHs to minimize immunogenicity risks in humans