

Single Domain Antibody Libraries

LakePharma has partnered with Twist Biopharma, a division of Twist Bioscience, to offer single domain antibody libraries as part of the antibody discovery and engineering services.

Three Single Domain Antibody Libraries

VHH Ratio

Specific oligo pools model the natural VHH repertoire

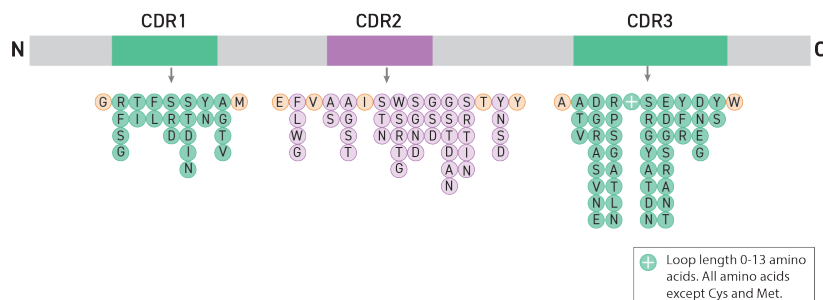
VHH Shuffle

Natural llama CDR sequences in the context of a llama consensus framework

VHH hShuffle

Natural llama CDR sequences in the context of a partially humanized VHH framework

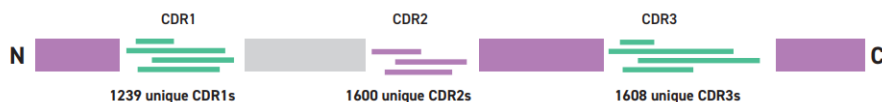
VHH Ratio



- 2,391 CDR sequences analyzed for position-specific variation
- Controlled CDR diversity introduced in the library
- Consensus llama framework

Highlights

- Small & modular antibodies
- Stable & robust
- Easier to engineer & manufacture
- Access to epitopes that are usually sterically hindered by an IgG
- Create building blocks for bispecific antibodies
- Off-the-shelf libraries ready for screening



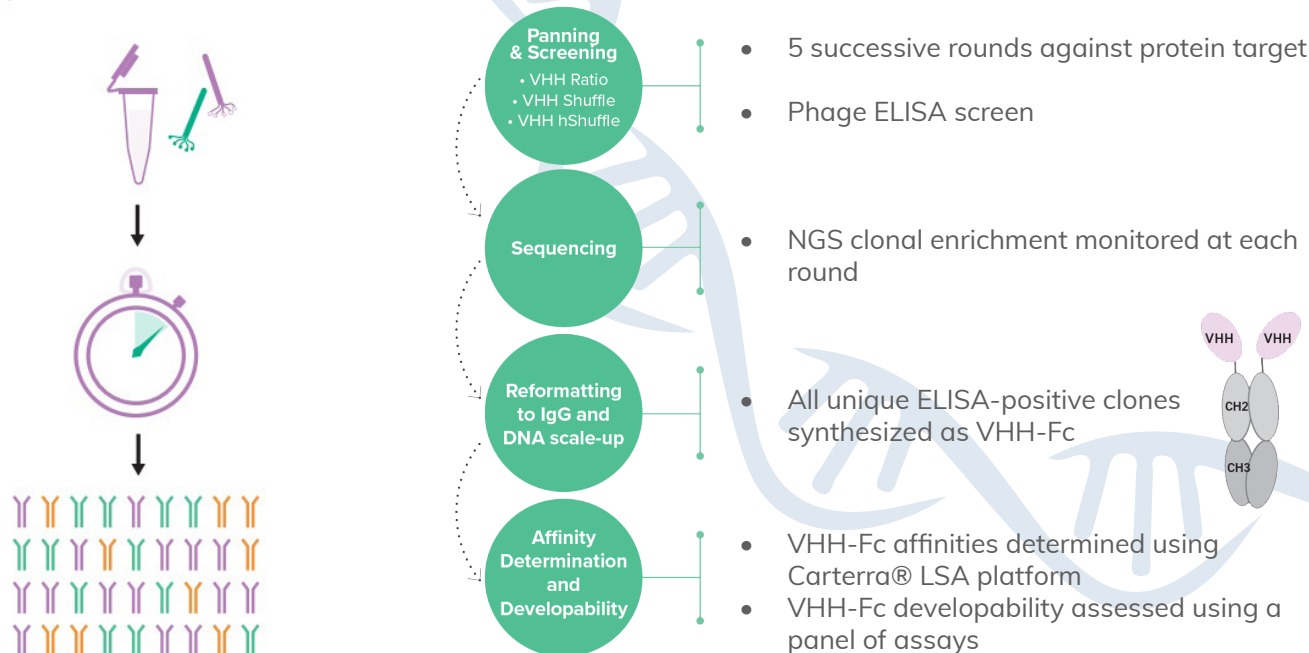
VHH Shuffle

- Each unique CDR individually synthesized
- Shuffled in consensus llama framework
- Final diversity of library greater than theoretical diversity
- Theoretical library diversity of 3.2×10^9

VHH hShuffle

- Shuffled CDRs with theoretical library diversity of 3.2×10^9
- Partially humanized framework: Framework 1, 3 and 4 were humanized using the human germline DP-47 framework

Proof of Concept Data

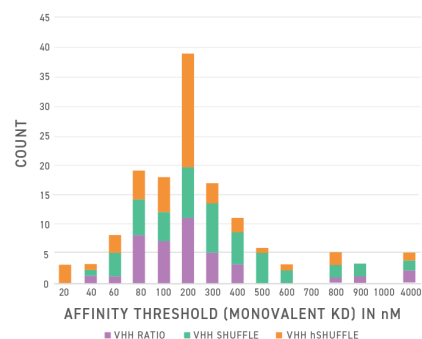


ELISA + Colony Count: 1 x 384-Well Plate Picked per Library per Round

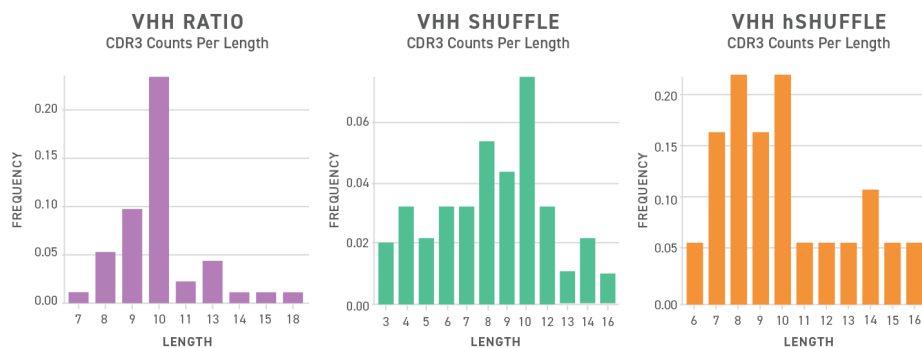
Library	Round 3	Round 4	Round 5	Uniques
VHH Ratio	58	85	188	47
VHH Shuffle	128	211	287	58
VHH hShuffle	82	222	255	56

Array SPR Binding Analysis

TIGIT AFFINITY DISTRIBUTION - VHH LIBRARIES



CDRH3 Length Distributions



Anti-TIGIT clones from VHH libraries encompass a range of affinities and diversity

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