Twist Ion Channel scFv Library

Tackle the second largest class of membrane proteins in drug discovery

The Twist Ion Channel scFv Library offers a revolutionary way to identify antibodies that target the 400+ members of the human ion channel family. Expanding upon our expertise in GPCR libraries, this diverse synthetic antibody library mimics natural peptide toxin repertoires from toxins known to block ion channels. Be among the first to access the synthetic advantage for ion channel antibody discovery.

KEY BENEFITS

Produce robust scFv antibodies against ion channels

- Proven, highly manufacturable framework
- Fully human antibody sequences
- 1 x 10^9 diversity

Capitalize on proven ion channel binding motifs

- Binding sites derived from natural peptide toxins
- Available with and without paired cysteines in HCDR3

Synthetic library advantage

- Avoid immunization
- Focus on effective sequence space
- Screen multiple targets simultaneously
- Engineer and optimize antibodies with ease

APPLICATIONS

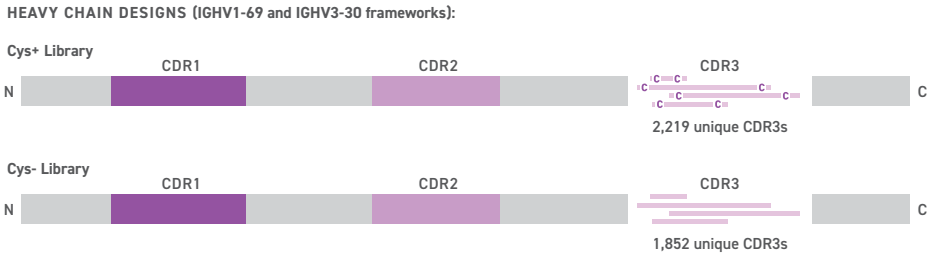
Ion channel-targeted drug discovery and development in therapeutic areas including:

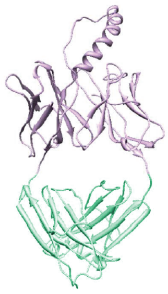
- Oncology
- Cardiovascular
- Inflammation
- Pain
- Diabetes

Library Specifications

A synthetic phage display library, the Twist Ion Channel scFv Library transplants loop sequences from natural peptide toxins of spiders, snakes, scorpions, and sea anemones into the HCDR3 of the Twist GPCR 2.0 scFv Library, a diverse human scFv antibody library. This allows the library to mimic the binding of peptide neurotoxins to ion channel targets. When introduced into two heavy chains (VH1-69 and VH3-30) and four light chains (VK1-39, VL1-51, VL2-14, VK3-15), combinatorial assembly generates a fully human scFv phage display library with a diversity of 1 x 10^9.

Twist offers two formats within the Ion Channel scFv Library: one with paired cysteines (Cys+ library), which can form intramolecular disulfide bonds to lock in the structure, and one without the cysteine pair (Cys- library). The Cys+ library incorporates the cysteine residues on the N- and C-terminal ends of the HCDR3 loop. Both formats are provided as a part of the Ion Channel scFv library, and can be panned in parallel against your target of interest.





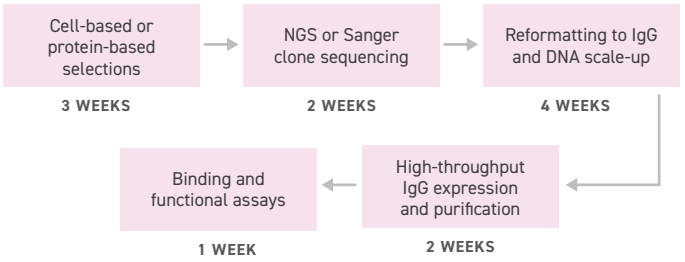
The Cys+ and Cys- libraries draw their CDR3 diversity from 2,219 loops (length: 11–78 amino acids) and 1,852 loops (length: 9–66 amino acids), respectively. Each CDR3 loop is flanked by flexible GSG linkers and excludes unpaired C- and N-glycosylation sites.

Library Panning & Screening

Go from panning to functional assays in 10–12 weeks. The process starts with phage screening the diverse Twist Ion Channel scFv Library against target antigens and ends with reformatting candidate antibody fragments to full-length IgG.

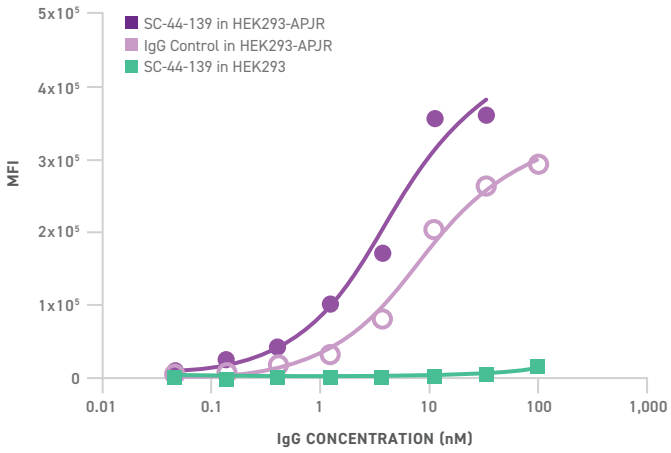
ION CHANNEL scFv LIBRARY
(LIBRARY DIVERSITY: $1X10^9$)

HIGH AFFINITY AND POTENCY TARGET-SPECIFIC IgG



Proof of Concept Data

The Twist Ion Channel scFv Library was successfully panned against APJR, a multi-pass transmembrane receptor, to identify multiple unique clones that bind this cardiovascular target. Flow titration demonstrates that antibodies like SC-44-139 bind APJR+ positive cells with high affinity.



	SC-44-139 (Human IgG)	IgG Control (Mouse IgG)
EC_{50} (nM)	4.4	8.3