

# Antibody Humanization

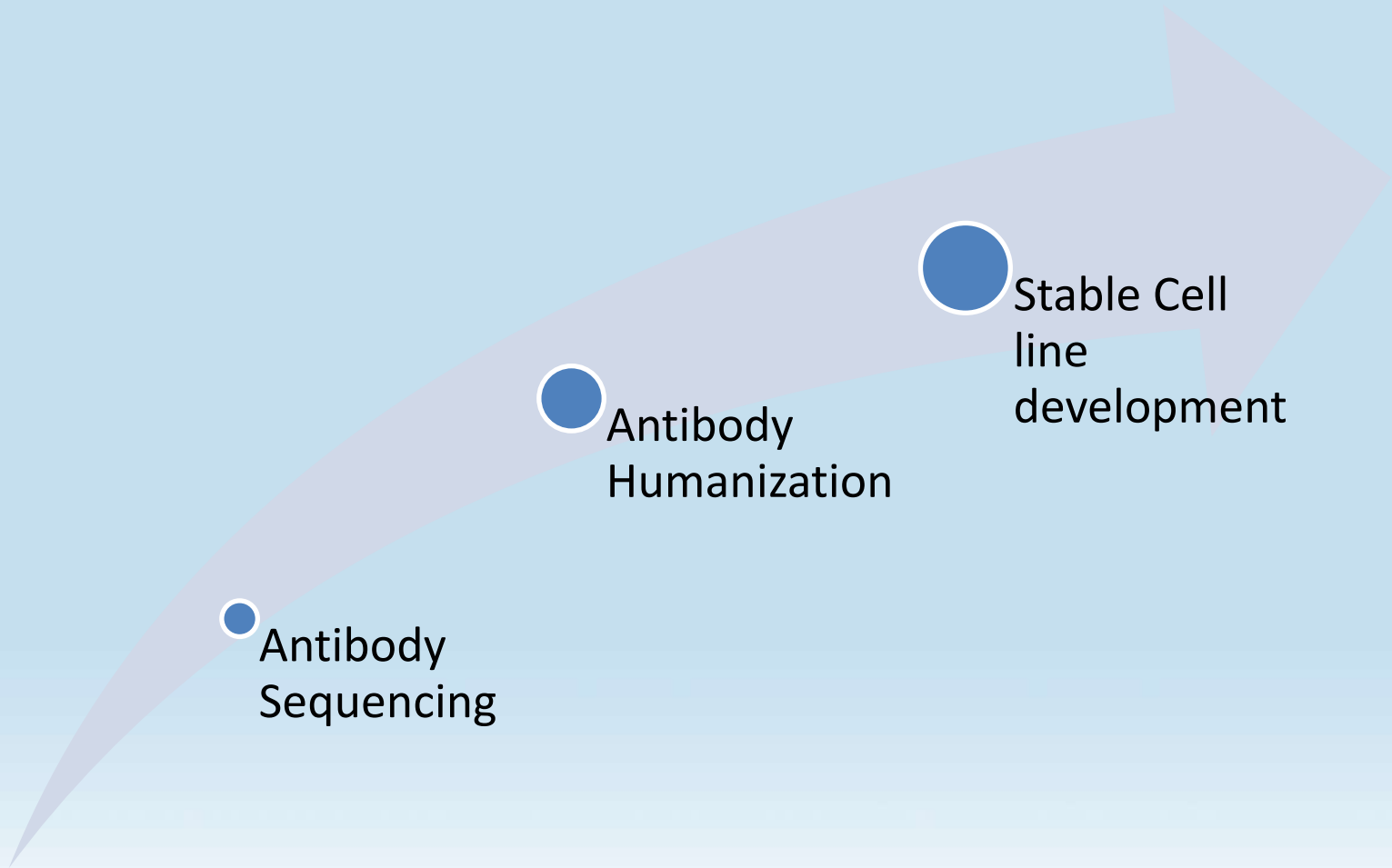
Introducing our Next Generation  
CDRx Humanization Platform



# Why Fusion Antibodies?



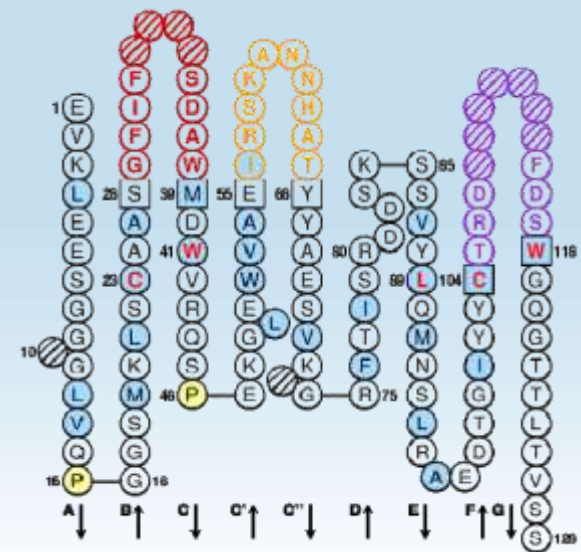
# Our Process



# Antibody Sequencing

- ✓ Unrivalled quality of service
- ✓ Guaranteed service
- ✓ CDR identification
- ✓ Aberrant Light Chain Identification
- ✓ Detailed analysis and report
- ✓ >600 projects completed to date

Standard Sequencing:	V <sub>H</sub> and V <sub>L</sub> only
5'RACE sequencing:	V <sub>H</sub> , V <sub>L</sub> and Leader sequence
Full Antibody Sequencing:	V <sub>H</sub> , V <sub>L</sub> , Leader and constant domains



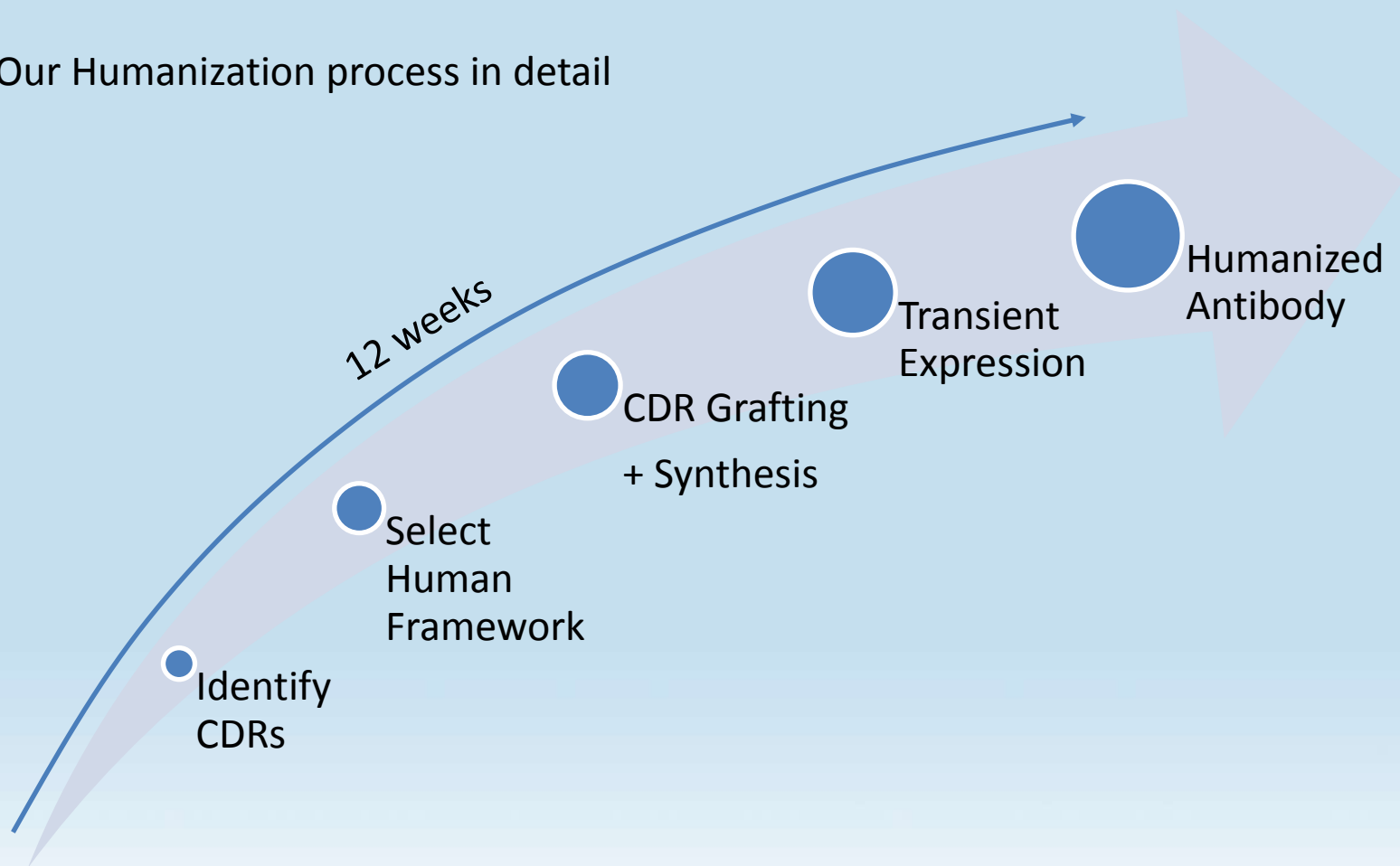
# Antibody Humanization

Fusion Antibodies provides **Royalty Free** Antibody Humanization of Monoclonal Antibodies. Using our next generation *in silico* CDRx technology we have modernized the traditional CDR grafting technique. We identify and combine the essential sequences from antibody variable domains into human donor sequences (not germ line) to create a panel of full length humanized antibodies for expression. Fully humanized monoclonal antibodies are an essential step in the progression of your drug to the clinic and the in-house expertise at Fusion Antibodies ensures its success.

- ✓ Modernized Version of Traditional CDR grafting
- ✓ T-Cell epitope screening
- ✓ Chimeric control included
- ✓ 10+ constructs in as little as 8 weeks
- ✓ Patented process with no Royalty Fee
- ✓ 2-fold Affinity Guarantee

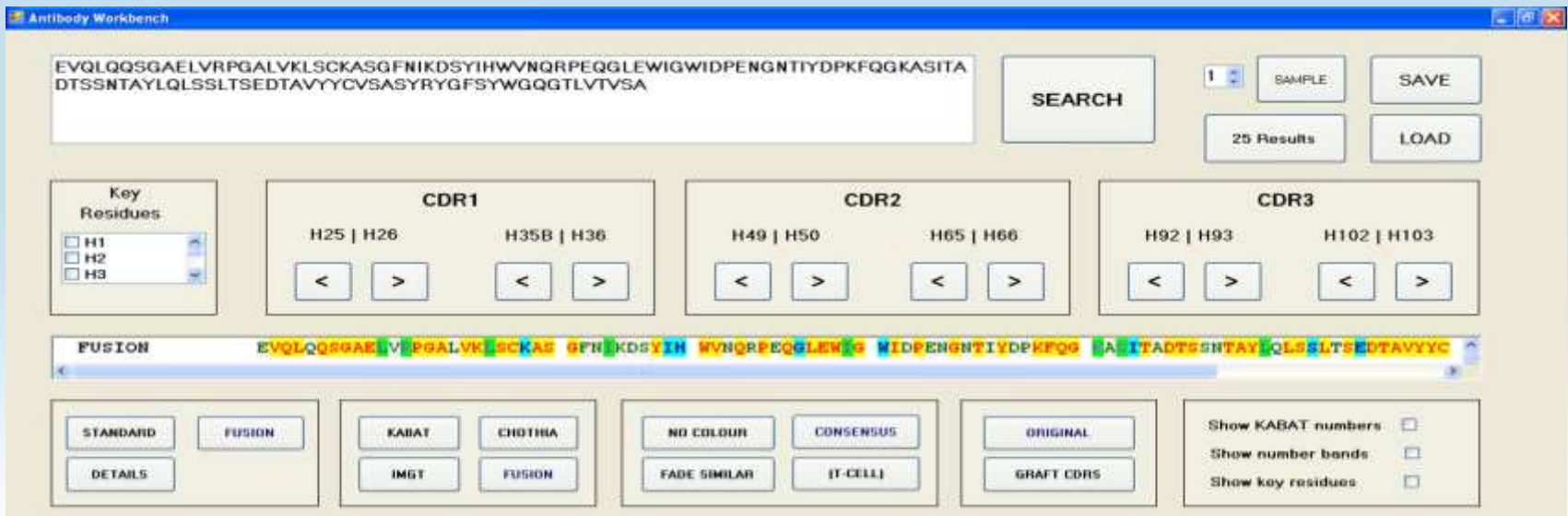
# Antibody Humanization

Our Humanization process in detail



# CDRx Platform

- Next generation *Insilco CDRx* platform
- Bespoke software platform developed from 12+ years of antibody engineering expertise
- Multiple improvements over traditional CDR grafting methods
- Allows Rapid, Accurate and Detailed analysis of CDRs and identification of recipient frameworks from a database of over 10,000 mature antibody sequences



Antibody Workbench

EVQLQQSGAELVIRPGALVKLSCKASGFNIKDSYIHWNQRPEQGLEWIGWIDPENGNTIYDPKFGKASITA  
DTSSNTAYLQLSSLTSEDYAVYYCVSASYRYGFSYWGGTLTVSA

SEARCH

1 SAMPLE SAVE

25 Results LOAD

Key Residues

H1  
 H2  
 H3

CDR1

H25 | H26      H35B | H36

< >      < >

CDR2

H49 | H50      H65 | H66

< >      < >

CDR3

H92 | H93      H102 | H103

< >      < >

FUSION

EVQLQQSGAELVIRPGALVKLSCKASGFNIKDSYIHWNQRPEQGLEWIGWIDPENGNTIYDPKFGKASITADTSSTAYQLSSLTSEDYAVYYC

STANDARD FUSION

KABAT CHOTHA

IMGT FUSION

NO COLOUR CONSENSUS

FADE SIMILAR (T-CELL)

ORIGINAL

GRAFT CDRS

Show KABAT numbers

Show number bands

Show key residues

# CDRx Platform

- Options for 9, 16 or 25+ Humanized Variants
  - More Humanized Variants provides increase peace of mind

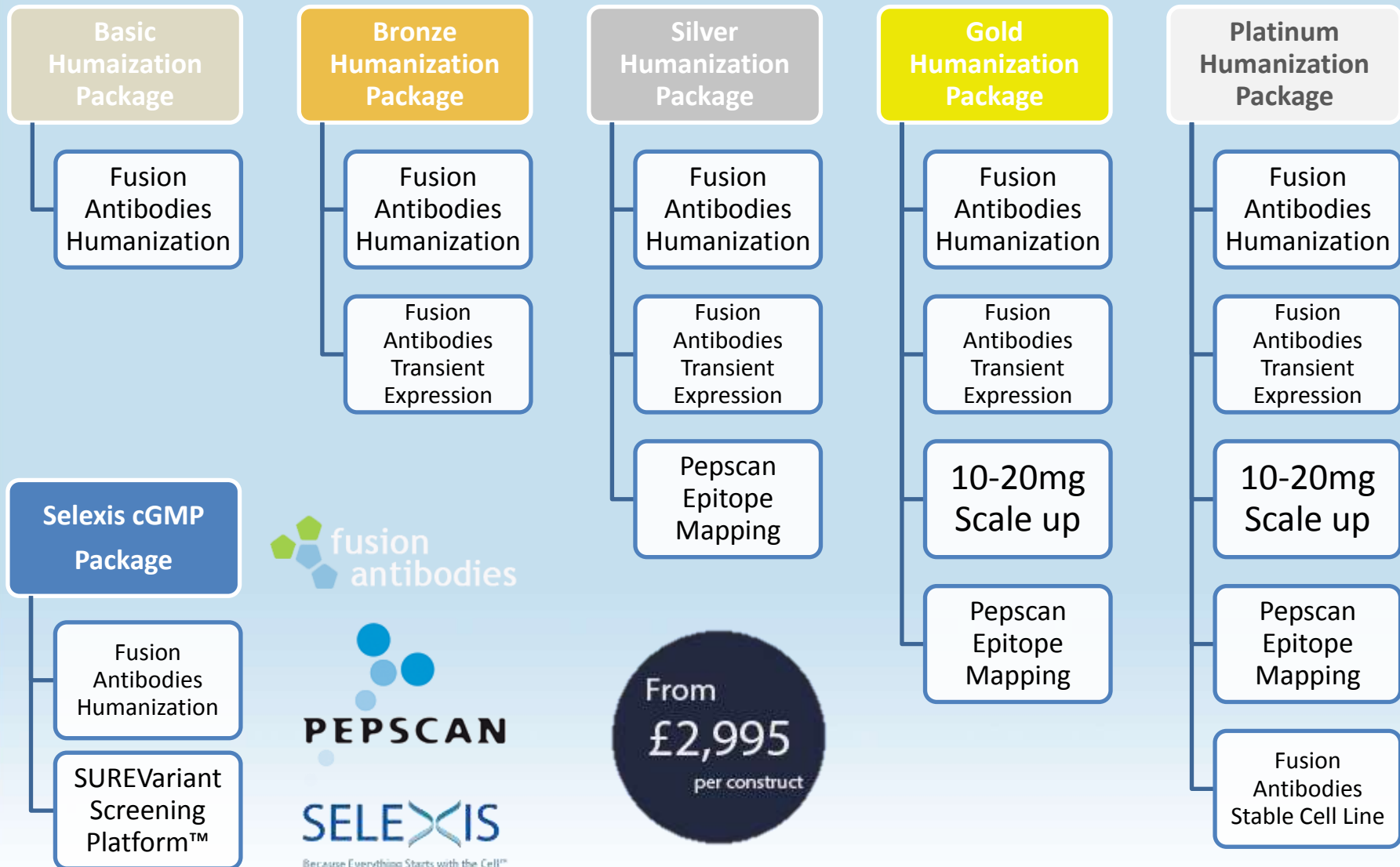
## Example Affinity Data

Antibody	$K_{\text{ass}} \text{ (l mol}^{-1} \text{ s}^{-1}\text{)}$	$K_{\text{diss}} \text{ (s}^{-1}\text{)}$	$K_{\text{D}} \text{ (nM)}$
Chimeric	$3.8 \times 10^4$	$3.3 \times 10^{-4}$	8.9
v1	$1.4 \times 10^4$	$4.0 \times 10^{-4}$	28.5
v2	$1.6 \times 10^4$	$3.6 \times 10^{-4}$	23.1
v3	**		
v4	$5.7 \times 10^4$	$2.9 \times 10^{-4}$	5.1
v5	$6.2 \times 10^4$	$3.2 \times 10^{-4}$	5.2
v6	$5.4 \times 10^4$	$3.8 \times 10^{-4}$	7.0
v7	$6.4 \times 10^4$	$9.3 \times 10^{-3}$	145
v8	$6.2 \times 10^4$	$1.5 \times 10^{-2}$	238
v9	**		

The Fusion Antibodies 2-fold affinity guarantee means your humanized variants will have comparable affinity or better!



# Service Levels



# Client Portfolio

Harvard University

ARIUS  
Research Inc.

TEVA

domantis  
The Domain Antibody Company

gsk

VHIO<sup>®</sup>

NOVARTIS

ALLERGAN



- High quality clients from small to large
- 3rd party verification of our technologies

dkfz.

Altech<sup>®</sup>  
...naturally

Pfizer

AXIS-SHIELD

LOSTAM  
BioPharmaceuticals

INSTITUT PASTEUR

MedImmune

CDC

Lundbeck

PALL  
Pall Corporation

NATIONAL  
CANCER  
INSTITUTE

NATIONAL INSTITUTES  
OF HEALTH

# Contact us

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