

# ANTIBODY ENGINEERING SERVICES

## Antibody humanization and affinity maturation

### Antibody Humanization



**10-year** experience  
**300+** antibody humanization projects delivered



As fast as **6 weeks**  
to get desired humanized antibody



Combining **CDR-grafting**  
with structure-based  
**back mutation**



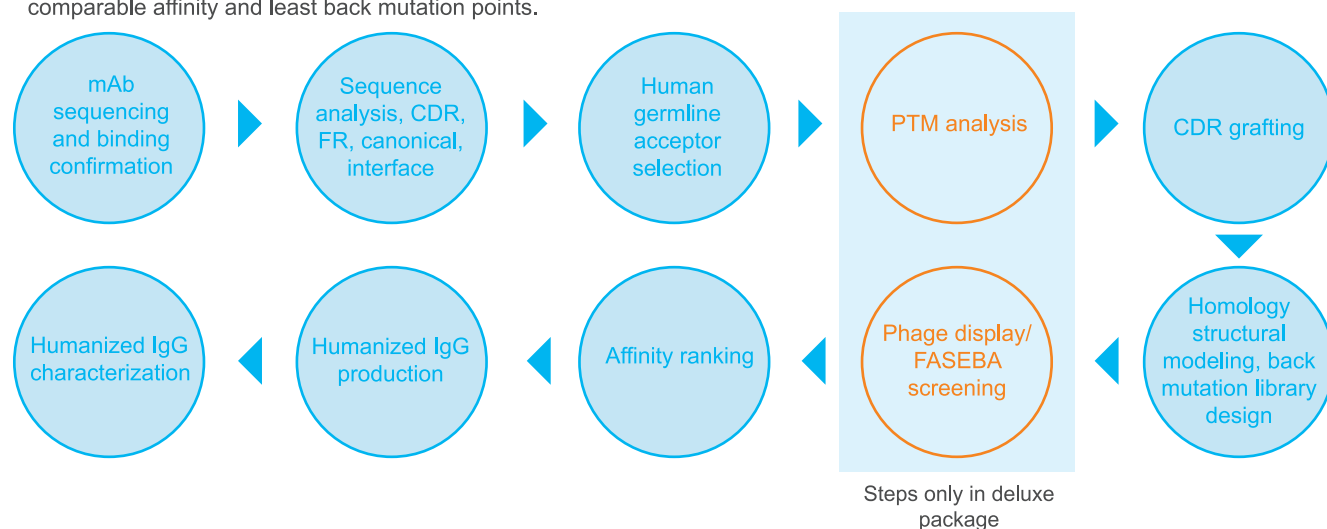
Guarantee comparable  
binding affinity with  
parental antibody

#### Deluxe Package

- Patented FASEBA(Fast Screening for Expression, Biophysical-properties and Affinity) screening platform to screen affinity, thermostability, expression level & epitope, no royalty burden
- Guaranteed delivery of best humanized antibodies with comparable affinity and least back mutation points.

#### Express Plus Package

- Fast turnaround time: **6 weeks**
- Guaranteed at least one humanized antibody with comparable affinity with parental antibodies



## Affinity Maturation

- **30+** affinity maturation projects delivered
- As fast as **8 weeks** to deliver your antibody sequences with desired affinity

### PML Library Based Deluxe Package

Guarantee **5-10 fold** affinity improvement

In a PML (precise mutagenesis library) library, saturation mutations are performed on about 65 amino acids in all six CDR regions. Each amino acid is mutated into the other 19 amino acids with the same distribution.

Together with FASEBA screening we can guarantee to increase the antibody affinity to target antigen by 5-10 fold. In our past case, we have successfully increased the affinity by 100 fold from  $10^{-10}$  to  $10^{-12}$ .

1

Parental IgG binding confirmation

2

PML library construction

3

FASEBA screening and ranking (single residues)

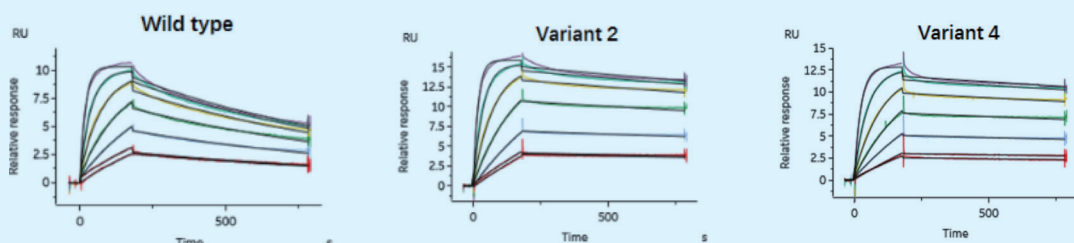
4

Combinatorial mutation library screening and ranking by FASEBA

5

Affinity matured IgG production and characterization

#### Case Study

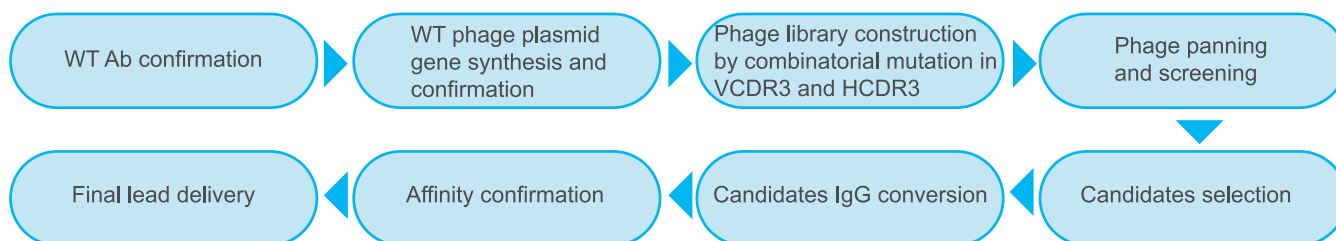


Ligand	Analyte	Chi <sup>2</sup> (RU <sup>2</sup> )	ka (1/Ms)	kd (1/s)	KD (M)	Rmax (RU)
Target A	Wild type	1.61E-02	5.61E+06	1.07E-03	1.91E-10	9.7
Target A	variant 2	3.69E-02	6.42E+06	2.13E-04	3.32E-11	15.2
Target A	variant 4	2.54E-02	4.38E+06	1.74E-04	3.97E-11	12

Affinity improved by 17 fold from  $10^{-10}$  to  $10^{-11}$

### Phage Display Library Based Economical Package

Guaranteed affinity improvement to **nM level, starting from \$37K**



— Address/  
Genscript ProBio USA Inc.  
20 Kingsbridge Rd,  
Piscataway, NJ 08854, USA

— Phone / 1-732-885-9188  
Toll-Free / 1-877-436-7274  
Fax / 1-732-885-5878

— Contact/  
[cdmo.us@genscriptprobio.com](mailto:cdmo.us@genscriptprobio.com)  
[cdmo.eu@genscriptprobio.com](mailto:cdmo.eu@genscriptprobio.com)  
[cdmo.apac@genscriptprobio.com](mailto:cdmo.apac@genscriptprobio.com)