DETAIBIO

Antibody Humanization

Based on AI Deep Learning

With the deep learning of AI, DetaiBio's humanization service can obtain antibody sequences with high degree of humanization and low mutation energy by constructing antibody structure model, CDR grafting and back mutation, identifying key amino acids and humanization operation.

During the humanization process, both heavy and light chains are involved in the optimization, and antibodies from multiple species can be humanized to ensure that the degree of humanization of the V region of the delivered sequence is greater than 85%, and the overall degree of humanization of the FV region is greater than 90%, ensuring that the affinity of the humanized antibody is comparable to that of the initial antibody.

Service Features

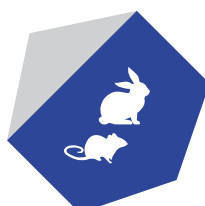Heavy and light chains simultaneously participate in optimization
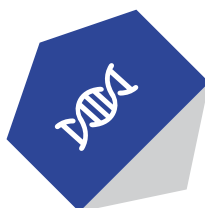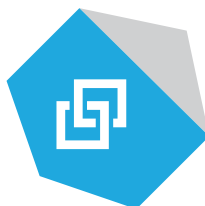
Modified antibodies degree of humanization >90%

Affinity of the humanized antibody is comparable to the initial antibody

Multiple species' antibody can be humanized

Procedure

01 Antibody sequence confirmation

02 Human germline acceptor selection

03 CDR grafting

04 Back mutation

05 Mutation energy ranking

06 Antibody expression

07 Affinity ranking
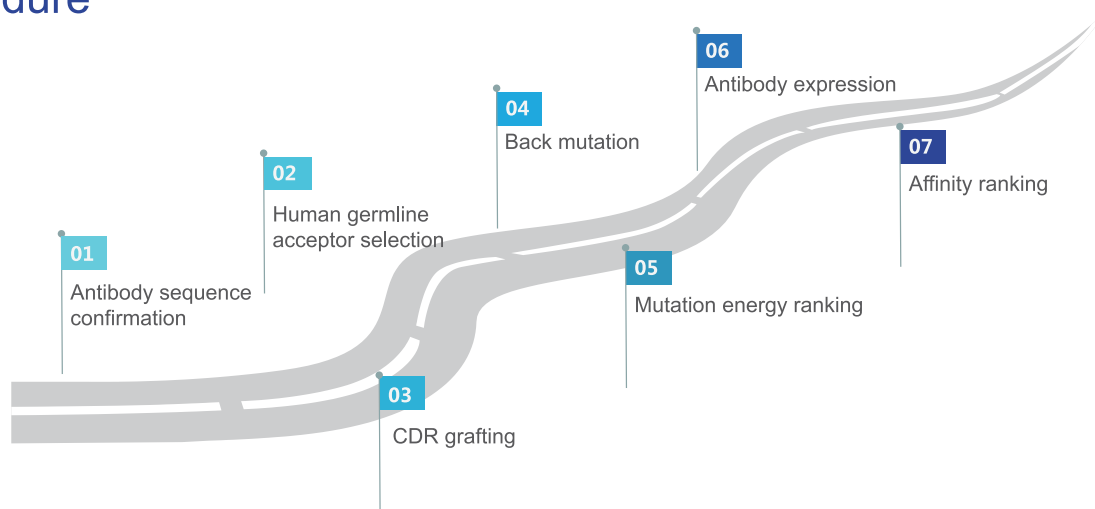
Workflow

Stage	Service	Timeline	Deliverables
Design of Humanized Antibody	· Antibody structural model construction · CDR grafting & back mutation · Key Amino Acid Identify · Ranking based on the degree of humanization and mutation energy	3 weeks	· 5 candidates sequences (at least one clone with affinity comparable to the initial antibody) · 1mg purified antibody for 1 chosen clone · Humanization design report · Antibody activity assay report · CoA
Candidates Expression	· Gene Synthesis & Plasmid Construction · Antibody Expression		
Candidates Activity Assay	· ELISA assay · FACS assay · Affinity Ranking	2 weeks	
Humanized Antibody Expression & Purification	· Antibody Expression · Purification without endotoxin	1 week	

Case Study
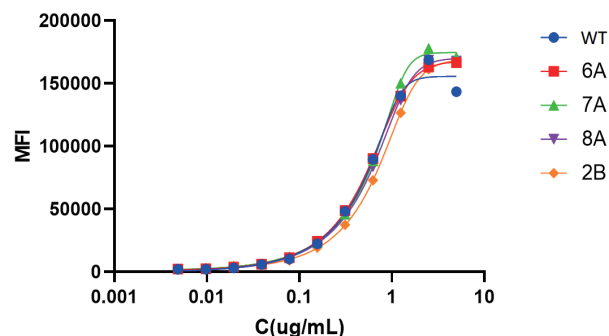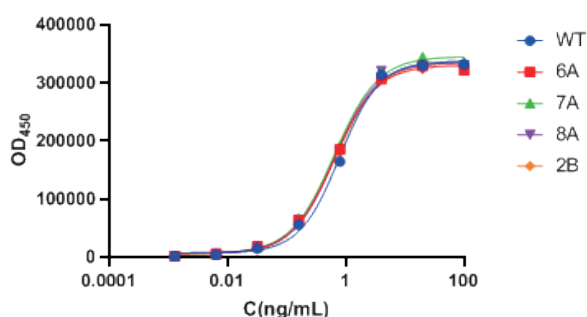
The humanized antibodies (6A, 7A, 8A, 2B) were found to have comparable affinity to the initial mouse-derived antibody (WT) by ELISA and FACS assays.