Antibody Humanization

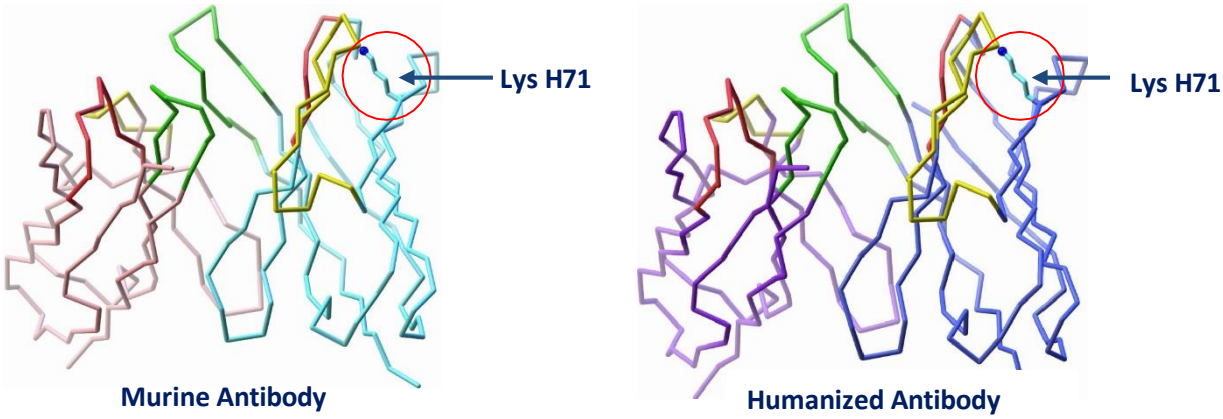
Although fully human antibodies are ideal for therapeutic development, many humanized antibodies have been approved by the FDA, since historically many antibodies were generated from immunized mice. These antibodies were then humanized to minimize immunogenicity and to provide effector functions in humans.

The most common antibody humanization approach is to graft the 6 CDRs from a murine antibody onto a human antibody acceptor framework. However, such CDR grafting often results in partial or complete loss of affinity of the humanized antibody, and some residues from the murine framework sequences need to be retained to replace the human residues at the corresponding positions (back mutations) to restore the lost affinity.

AvantGen Technology Platform	
Attributes	**Performance**
Affinity and Specificity	Humanized antibodies retain antigen binding specificity and often demonstrate improved affinity
Developability	Germline acceptors are selected based on best-fit, canonical structures and thermo-stability to improve the developability of the humanized antibodies
Humanness	The number of residues from the framework of the parental antibodies is minimized in the humanized antibodies to ensure the highest degree of humanness

AvantGen has extensive antibody modeling and engineering expertise to successfully restore and, if necessary, improve on the binding affinity of the humanized antibody and provide superior developability. Our approach typically requires including just a minimal number of murine framework residues in the humanized antibodies to restore antigen binding activity to ensure the highest degree of humanness and the lowest potential for immunogenicity of the humanized antibodies.

Back mutation with a single Lys H71 residue fully restored the binding activity of a humanized antibody



Murine Antibody **Humanized Antibody**

AvantGen Inc
6162 Nancy Ridge Drive, Suite 150, San Diego, CA 92121, USA
www.avantgen.com | contact@avantgen.com