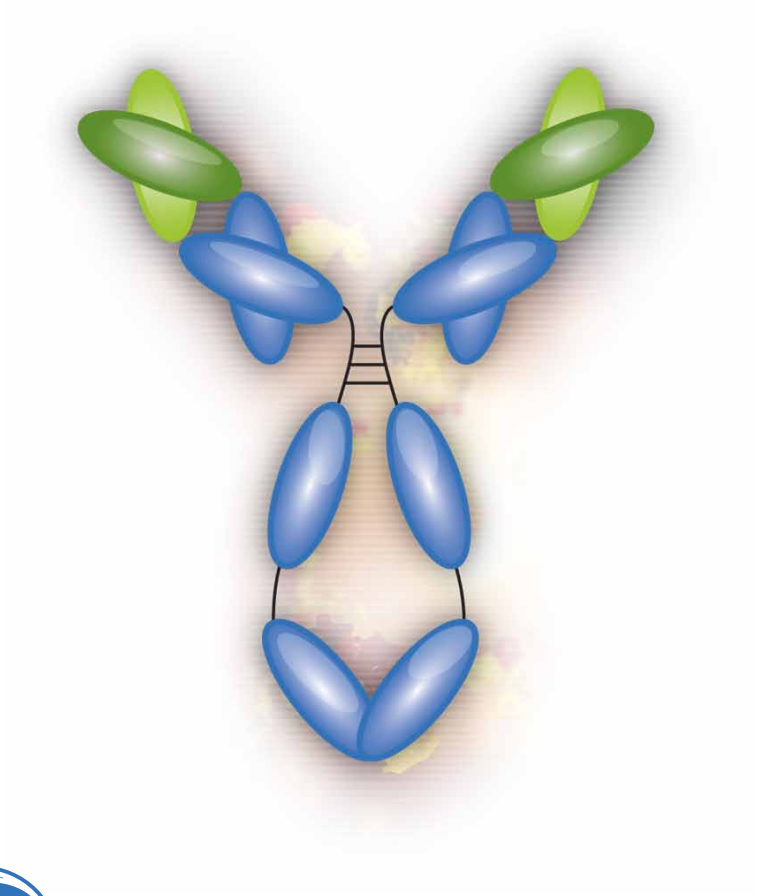
GE Healthcare
Life Sciences

Capture tools for antibody fragments



imagination at work

Antibody fragments are set to become the next important class of protein-based biotherapeutics after monoclonal antibodies (MAbs). One of the advantages that MAbs offer is the possibility to use a platform approach to purification, where capture by protein A affinity chromatography has become the industry standard.

So far, a similar purification platform for antibody fragments has not been available because of their high diversity compared to full length antibodies.

With the introduction of Capto™ L and LambdaFabSelect chromatography media, the first industrial platform for the purification of antibody fragments is now emerging. Capto L , with its protein L ligand, is a chromatography medium with a broad range affinity for antibody fragments of different sizes containing kappa light chains. LambdaFabSelect is an affinity medium used for the capture of Fabs containing lambda light chains. In humans, approximately 60% of antibodies contain the kappa light chain and the remaining 40% contain the lambda light chain. The exact proportions might differ for recombinant antibody fragments. Together, Capto L and LambdaFabSelect cover nearly all Fabs as well as a large proportion of smaller antibody fragments.

In addition, KappaSelect, which binds to a different region on the kappa light chain than Capto L, can be used to capture Fabs containing a kappa light chain when Capto L is not optimal. For capturing heavy chain domain antibodies containing the VH_3 subtype MabSelect™, a protein-A affinity medium, is a useful alternative. Figure 1 details the affinity map of these four chromatography media.

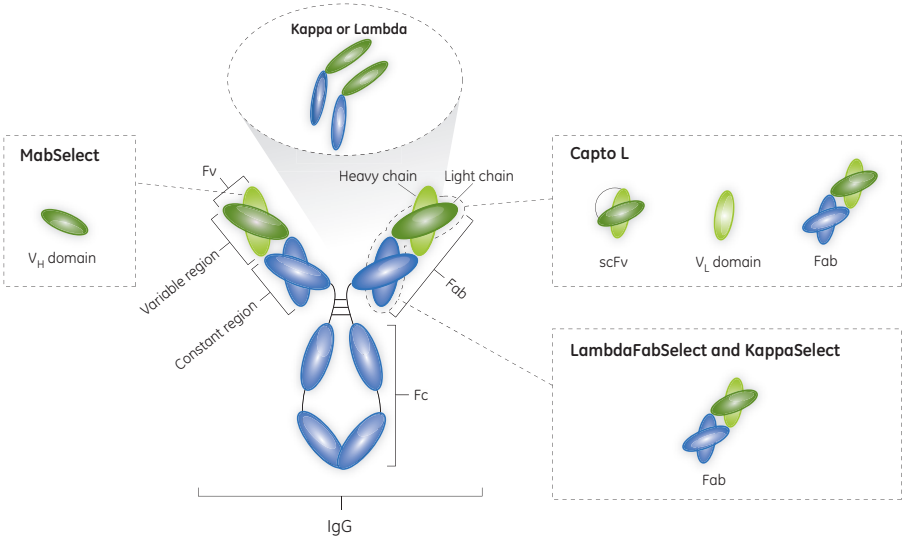


Fig 1. Binding sites for the different chromatography media for capture of antibody fragments.

All these media are designed for industrial scale manufacturing. Based on a well-proven, high-flow agarose base matrix, they ensure high productivity and high dynamic binding capacity. In addition, all have a Regulatory Support File and security of supply. Figure 2 is a guide to selecting the appropriate affinity media for capture of different Fabs.

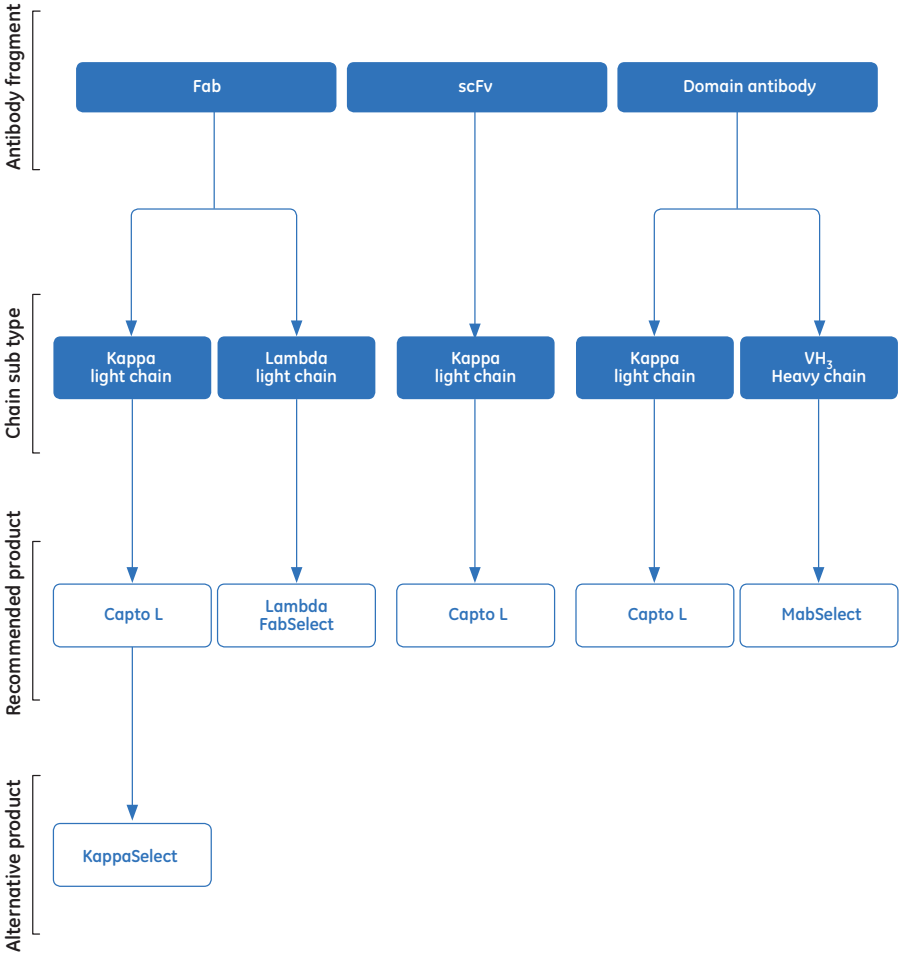


Fig 2. Guide to selecting affinity media for capture of antibody fragments. Details of the different media can be found in their respective data files (www.gelifesciences.com).

Antibody fragments that fall outside of the range of these tools include scFv (single-chain Fv) fragments with the lambda light chain, and heavy-chain domain antibodies with subtypes V_{H1}, V_{H2} and V_{H4} . For these fragments, we recommend ion exchange or multimodal chromatography media such as Capto MMC.

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