

TOYOPEARL® AF-rProtein L-650F

A High Capacity Protein L Resin for the Purification of Monoclonal Antibody Fragments

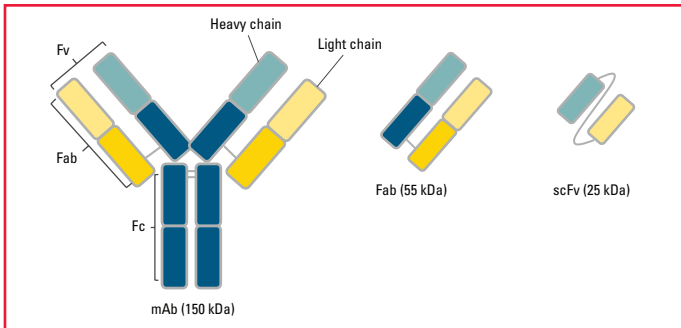
TOYOPEARL
PRODUCT OVERVIEW

Introduction

Protein L-based affinity chromatography is used for the capture of antibodies and antibody fragments that do not bind to protein A. Unlike protein A and G, which bind to the Fc region of immunoglobulins (IgGs), protein L binds through interactions with the variable region of an antibody's kappa light chain. Therefore, protein L binds a wider range of antibody classes than protein A.

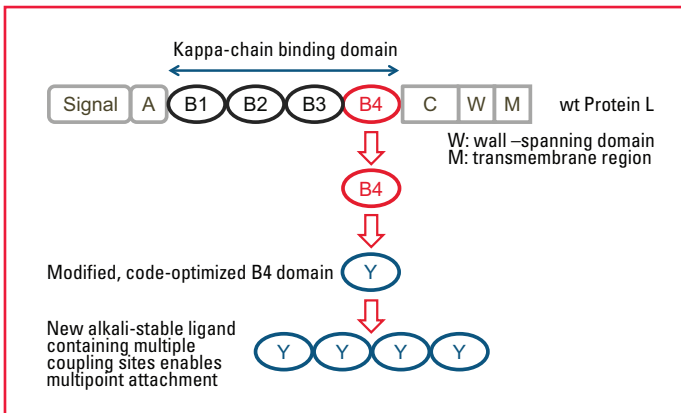
Figure 1 shows typical protein L binding regions, such as antigen binding fragments (Fabs), single-chain variable fragments (scFvs) and domain antibodies (dAbs).

Figure 1. Protein L binds to the variable region of the kappa light chain



TOYOPEARL AF-rProtein L-650F is an affinity chromatography resin that combines a rigid polymer matrix with a recombinant ligand, which is derived from the B4 domain of native protein L from *Peptostreptococcus magnus* and is expressed in *E. coli* (Figure 2). Code optimization of the domain results in higher binding capacity and an improved stability of the ligand compared to the native molecule. Resin costs represent a considerable part of the overall production costs. The high binding capacity and great alkaline resistance of the TOYOPEARL AF-rProtein L-650F resin can remarkably improve process economics in the production of antibody related recombinant molecules.

Figure 2. Structure of TOYOPEARL AF-rProtein L-650F



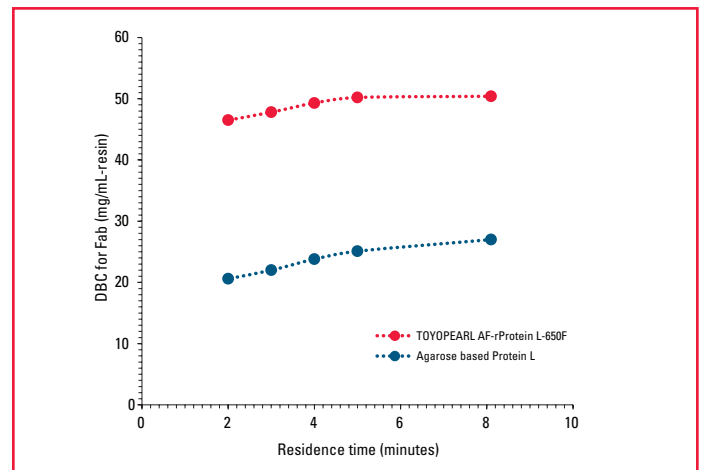
Product Attributes

Pore size (mean):	100 nm
Particle size (mean):	45 µm
Pressure rating:	0.2 MPa
Shipping buffer:	20% ethanol
pH stability:	2-13
Shelf life (estimated):	10 years

Performance

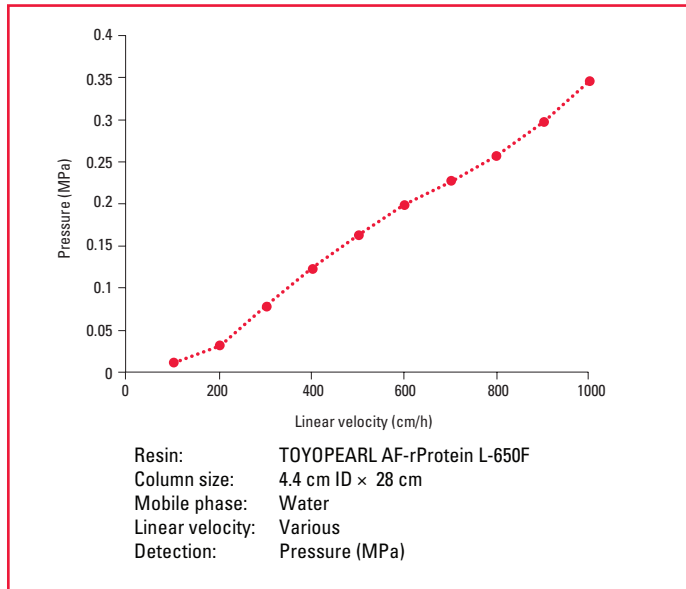
The combination of an optimized recombinant ligand and the proven TOYOPEARL base matrix results in a resin that provides the highest binding capacity available on the market for Fab molecules. Figure 3 shows the excellent binding capacity of TOYOPEARL AF-rProtein L-650F for a Fab fragment at various residence times in comparison to an agarose based protein L medium. The binding capacity of the TOYOPEARL AF-rProtein L-650F resin is 50 mg/mL for a Fab with a typical molecular weight of 55 kDa, which equates to a dynamic binding capacity (DBC) of >130 mg/L for a ~150 kDa IgG when considering molar binding capacities.

Figure 3. Dynamic binding capacity of TOYOPEARL AF-rProtein L-650F



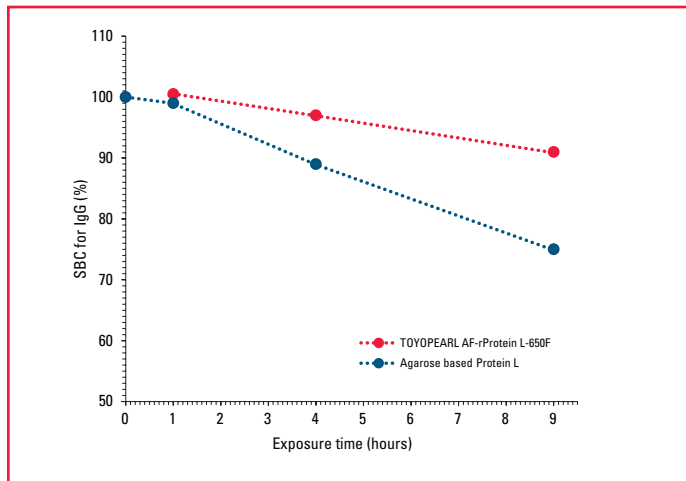
TOYOPEARL AF-rProtein L-650F is based on the well proven polymethacrylate matrix used for all TOYOPEARL resins. *Figure 4* shows the pressure-flow curve for this resin packed in a 4.4 cm column with a bed height of 28 cm. Linear velocities up to 600 cm/hr can easily be applied to TOYOPEARL AF-rProtein L-650F columns.

Figure 4. Pressure-flow curve



The multipoint attachment of the protein L ligand results in a high chemical stability. *Figure 5* proves the robustness of the TOYOPEARL AF-rProtein L-650F resin towards a moderate alkaline solution (0.1 mol/L NaOH) in comparison to a competitive protein L resin.

Figure 5. Stability of TOYOPEARL AF-rProtein L-650F



Ordering Information

Part #	Description	Resin Volume
23486	TOYOPEARL AF-rProtein L-650F	10 mL
23487	TOYOPEARL AF-rProtein L-650F	25 mL
23488	TOYOPEARL AF-rProtein L-650F	100 mL
23489	TOYOPEARL AF-rProtein L-650F	1 L
23490	TOYOPEARL AF-rProtein L-650F	5 L
23494	ToyoScreen AF-rProtein L-650F	1 mL × 5
23495	ToyoScreen AF-rProtein L-650F	5 mL × 1
23496	ToyoScreen AF-rProtein L-650F	5 mL × 5
45162	MiniChrom TP AF-rProtein L-650F	5 mL
45065	RoboColumn AF-rProtein L-650F	8 × 200 µL
45066	RoboColumn AF-rProtein L-650F	8 × 600 µL
OC41MDAF-PL-650F	Resin Seeker Plate: TOYOPEARL AF-rProtein L-650F	20 µL resin bed

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