Cube Biotech

PureCube Activated and Customized Matrices

While tag-based affinity matrices afford a standardized and consistent method to purify proteins, the versatility of affinity matrices is only first apparent when coupled to molecules that interact directly with the protein of interest. Loading a matrix with protein-specific ligands, agonists, antibodies, peptides, small proteins, or other molecules enables new experimental applications.
Cube Biotech offers activated matrices for coupling of own molecules, but also manufacturing services for individual affinity matrices.

- Broad choice of activated agaroses and magnetic beads
- Option to couple many biological molecules for specific protein affinity purifications
- Full range of services from customized resin synthesis to contract protein purification

Broad choice of activated affinity matrices

Activated matrices are available in a range of modifications to accommodate requirements for different molecules that can be coupled, and different coupling chemistries. Both Agaroses and MagBeads are equipped with the same surface chemistries, allowing for easy switch, e.g. for upscaling purposes. With the help of detailed protocols provided online, coupling can be done using standard laboratory equipment.
Additional modifications and bulk amounts are offered on request. Please contact us for more details.

PureCube Activated Agarose or MagBeads	Coupling Chemistry	Coupled molecule
Carboxy Agarose / MagBeads	EDC/NHS	Coupling of proteins via amine groups
NHS-Activated Agarose / MagBeads	direct	Coupling of proteins via amine groups
Amine Agarose / MagBeads	EDC/NHS	Coupling of proteins via carboxy groups
Epoxy-Activated Agarose / MagBeads	direct	Coupling of thermostable proteins and small molecules via amine or thiol groups
Divinylsulfone-Activated Agarose / MagBeads	direct	Coupling of proteins via amine groups
Maleiimide-Activated Agarose / MagBeads	direct	Coupling of proteins via thiol groups
Thiol-Activated Agarose / MagBeads	direct, oxidative	Reversible coupling of proteins via thiol groups
Glycidol-Activated Agarose / MagBeads	direct, reductive amination	Coupling of proteins via amine groups

Table 1: PureCube offering for Activated Agaroses and MagBeads.

Customized affinity matrix service

For more complicated projects, or if outsourcing of the coupling reaction is desired, Cube Biotech offers the full service from consulting to manufacturing of customized affinity matrices. In close collaboration with the customer, we design the optimal coupling chemistry for your project, take care of sourcing of required chemicals, and typically deliver the tailor-made affinity matrix within 2-3 weeks. We develop pilot synthesis reactions matching your specifications and work with you to evaluate the utility and quality of the resulting matrices. We then produce the best performing matrix in the quantities needed - from a few mililiters to bulk volumes. Customized affinity matrices can also be integrated in our protein production services. Projects are kept confidential and can be exclusive if required.

Applications for protein-specific matrices

There are endless possibilities for protein-specific applications. These include

- purification of proteins **without an affinity tag**
- purification of proteins in their **active** state or a particular **conformation**
- purify **correctly folded** protein, especially when expression is done in bacterial systems
- increase **activity** of the protein preparation for functional studies
- increase **homogeneity** of the protein preparation for structural studies

Elution from the affinity matrix can be done by competitive elution, or using cleavable linkers. (Fig.1)

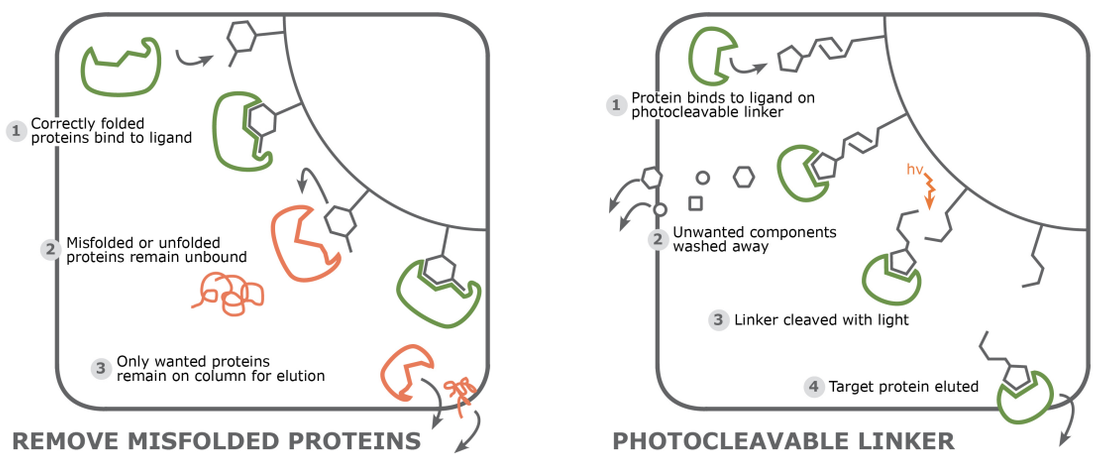

Fig. 1: Examples for protein-specific matrix applications.

Left: Protein-specific matrices can be used to selectively purify correctly folded proteins that bind their ligand.

Right: Photocleavable linkers can be used for elution of the bound protein-ligand complex, if binding kinetics of the ligand do not allow competitive elution.

Ordering Information

Catalog Number	Product Description
50103	PureCube Carboxy Agarose (10 mL) 20 mL of a 50% suspension; Larger amounts also available
50303	PureCube NHS-Activated Agarose (10 mL) 20 mL of a 50% suspension; Larger amounts also available
50201	PureCube Carboxy MagBeads (1 mL) 25% suspension; 5 mL and larger amounts also available
50401	PureCube NHS-Activated MagBeads (1 mL) 25% suspension; 5 mL and larger amounts also available

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