

SMART Chromatography™

Purification from cell containing feed streams
in packed bed columns



SMART Chromatography™ is one of the most exciting developments in protein purification. **SMART Chromatography™** allows the purification of biomolecules directly from the bioreactor without first having to clarify the feed stream.

Particle-based biomolecule separation is a well-established technique and has been used successfully for many years. However, preparation of the feed stream is a time-consuming and costly step and the problems associated with this only increase as the bioreactor volume increases in scale. Cell removal steps also result in lower recovery of the desired biomolecule, thus increasing the overall cost of the production process.

As the primary step in a purification process, **SMART Chromatography™** eliminates the requirement to remove cells before application to the chromatography column, reducing the number of steps in the process, reducing time and increasing product recovery.



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SMART Chromatography™ uses proprietary ZetaCell solid phases. These are based on large-particle highly cross-linked agarose, which is surface-modified to provide the desired binding functionality. The beads have been designed to allow cells and cell debris from the bioreactor to pass unhindered through the packed column bed.

SMART Chromatography™ columns are supplied pre-packed and ready-to-use.

For larger columns please contact us. All SMART Chromatography™ and ZetaCell products are manufactured in dedicated ISO certified facilities under strict control and according to the highest of internationally recognized quality standards.

emp BIOTECH is also pleased to supply you with fully customized solutions designed specifically for your application. Please contact us for a consultation.

Resin name	Functionality	Ligand	Target	Code
ZetaCell Protein A	Affinity	Protein A	Antibodies	TM-4401
ZetaCell Protein A Endure	Affinity	Base-stable protein A	Antibodies	TM-4403
ZetaCell Protein G	Affinity	Protein G	Antibodies	TM-4404
ZetaCell IDA	Affinity	Iminodiacetic acid	His-tagged proteins	TM-4402
ZetaCell NTA (metal-free)	Affinity	Nitrilotriacetic acid	His-tagged proteins	TM-4405
ZetaCell Cu-NTA	Affinity	Nitrilotriacetic acid Cu ²⁺	His-tagged proteins	TM-4409
ZetaCell Co-NTA	Affinity	Nitrilotriacetic acid Co ²⁺	His-tagged proteins	TM-4407
ZetaCell Ni-NTA	Affinity	Nitrilotriacetic acid Ni ²⁺	His-tagged proteins	TM-4406
ZetaCell Zn-NTA	Affinity	Nitrilotriacetic acid Zn ²⁺	His-tagged proteins	TM-4408
ZetaCell Phenyl	HIC	Phenyl (C ₆ H ₅)	General protein purification	TM-4501
ZetaCell Q	IEX (Strong Anion)	Quaternary ammonium	Neg. charged molecules	TM-4205
ZetaCell Q Boost	IEX (Strong Anion)	Quaternary ammonium	Neg. charged molecules	TM-4206
ZetaCell SP	IEX (Strong Cation)	Sulphopropyl	Pos. charged molecules	TM-4201
ZetaCell SP Boost	IEX (Strong Cation)	Sulphopropyl	Pos. charged molecules	TM-4202
ZetaCell DEAE	IEX (Weak Anion)	Diethyl-aminoethyl	Neg. charged molecules	TM-4207
ZetaCell DEAE Boost	IEX (Weak Anion)	Diethyl-aminoethyl	Neg. charged molecules	TM-4208
ZetaCell CM	IEX (Weak Cation)	Carboxy-methyl	Pos. charged molecules	TM-4203
ZetaCell CM Boost	IEX (Weak Cation)	Carboxy-methyl	Pos. charged molecules	TM-4204
ZetaCell Aldehyde activated	Activated	Client provided	Binding to specific ligand	TM-4301

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SMART Chromatography™ has been successfully used for a wide range of primary protein purification procedures and from a variety of cell systems, including:

Cell system	Target molecule	Method	ZetaCell resin	Binding capacity
CHO	Antibody (human IgG)	Affinity	Protein A & Protein A Endure	15 mg/mL
CHO	Antibody (mouse IgG1)	Affinity	Protein A	16 mg/mL
Pichia pastoris	Confidential	Affinity (IMAC)	IDA	Proprietary
E. coli	His-tagged GFP	Affinity (IMAC)	Ni-NTA	16.7 mg/mL
E. coli	His-tagged GFP	Affinity (IMAC)	IDA	15.9 mg/mL
Saccharomyces cerevisiae	Confidential	IEX	SP	>25 mg/mL
E. coli	Smallpox virus (300 nm)	IEX	Q Boost	Proprietary

For more information, please contact us at +49 30 9489 2201 or smart@empbiotech.com

