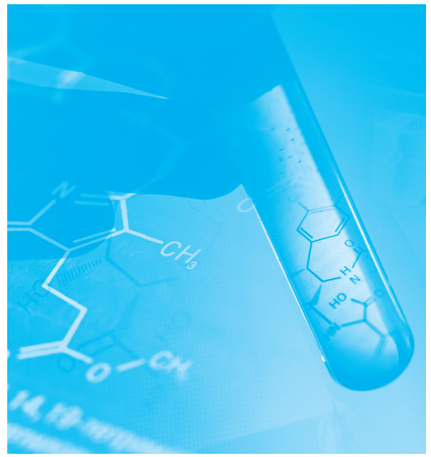
Thermo Scientific MSIA Microcolumns for Freedom EVO Platform

Next Generation Large Molecule

Bioanalysis Simplified

TECAN.

Thermo SCIENTIFIC



Overcome affinity purification challenges

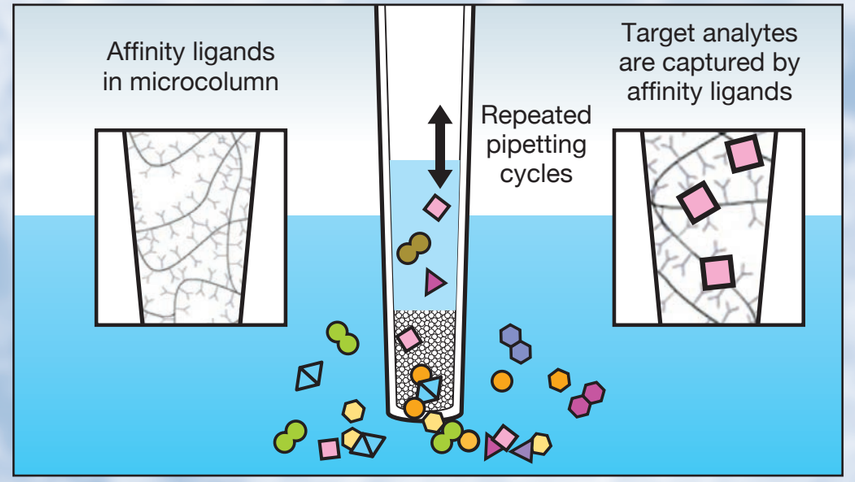
Biopharmaceutical, translational, clinical and sports anti-doping labs performing high throughput characterization of large molecules are challenged by the limitations of conventional affinity purification methods. Common challenges encountered with such techniques include low efficiency, inconsistent results, high background and carryover, and the inability to standardize and transfer analytical methods.

These challenges can be overcome by the Thermo Scientific™ MSIA™ workflow for the Freedom EVO platform. This solution combines the Tecan Freedom EVO® platform, specialized for robust and high-throughput liquid handling with MSIA Streptavidin EVO microcolumns for fast and accurate isolation of target analytes from complex biological matrices. Additionally, it allows for hands-free affinity purification, and the simple workflow enables standardization and transfer between labs.

The fusion of robust & reliable technologies

Thermo Scientific Mass Spectrometric Immunoassay (MSIA) microcolumn technology is a novel affinity capture method for large molecule analysis. This technology enables users to affinity purify the target analyte with ease from complex biological matrices for downstream analysis using different detection methods. Housed in a pipette tip, these proprietary monolithic microcolumns are densely coated with a target specific affinity ligand for effective and efficient analytical grade affinity purification of even low abundant target analytes. This analytical affinity purification is essential for large molecule bioanalysis in Ligand Binding Mass Spectrometric Immunoassay (LB-MSIA) – today's emerging hybrid workflow.

Embedding molecular trapping microcolumns in a functional pipette tip creates a versatile and user-friendly affinity capture device that provides users the flexibility to analyze sample volumes as low as 10 µL, thus saving precious samples.



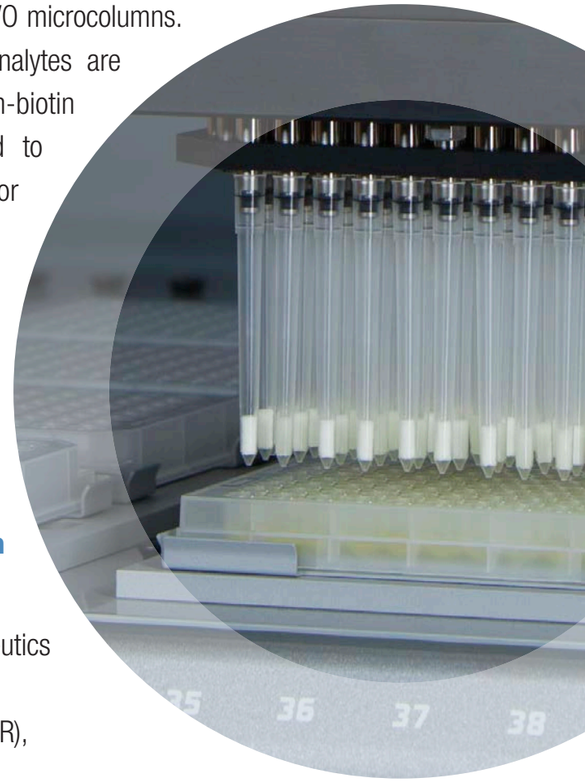
Automation of MSIA technology allows labs to meet productivity demands while reducing assay development timelines, supporting easy transfer for assays between labs, and eliminating user induced errors.

Unrivaled automation for increased efficiency

The MSIA Streptavidin EVO microcolumns are designed for automation on the Tecan Freedom EVO series of instruments that are fitted with a 96 multichannel liquid handling arm (MCA 96). By combining the innovative MSIA technology with these proven high-throughput automation solutions from Tecan, the MSIA workflow for the Freedom EVO platform will transform the way you perform your large molecule bioanalysis.

Innovation and performance simplified

Streptavidin is covalently linked to the porous yet solid monolithic support in the distal end of the MSIA Streptavidin EVO microcolumns. Using biotin conjugated affinity ligands, analytes are enriched by the immobilized streptavidin-biotin conjugated complex, washed, and eluted to provide analytical grade samples for downstream detection methods.



MSIA Streptavidin-EVO provides an innovative solution in the following areas:

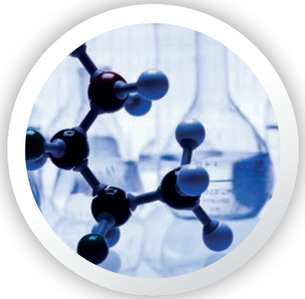
- Pre-clinical and clinical trials of biotherapeutics
- Analysis of therapeutic antibodies
- Biotransformation [Drug antibody ratio (DAR), and drug antibody conjugate (DAC)]
- Analysis of protein variants and post-translational modifications
- Biomarker discovery and analysis
- Detection and characterization of exogenous biomolecules in sports doping

Product Specification	
Immobilized Streptavidin (% CV)	10 µg/microcolumn (<15 %)
Binding capacity of biotinylated antibodies, based on biotinylated-IgG (% CV)	7.5 µg/microcolumn (<15 %)

MSIA Streptavidin-EVO: Innovative enablement in diverse areas

Pharma and Biopharma

Biomarker Development



Biologics and Biosimilars (Drugs) Discovery and Development

Clinical/Translational

Biomarker Development

Epidemiological Biomarker studies

Sports Anti-Doping

Testing: Large Molecules of Abuse

Complex Biological Sample

- Serum
- Plasma
- Urine
- Other biological fluids

MSIA Workflow

- SDS-PAGE/ Western blot
- UV/Vis
- Mass Spectrometry

Innovative simplified affinity purification

Robust and reliable liquid handling

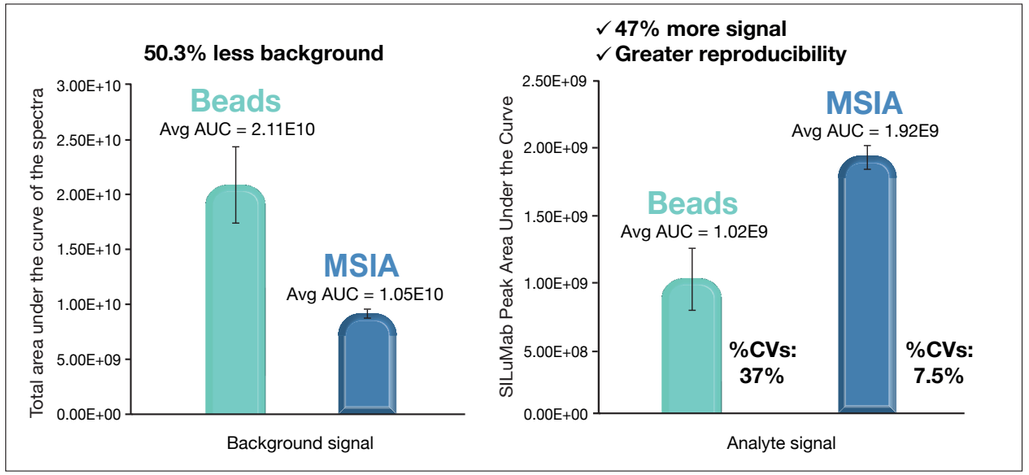
Flexibility in detection methods

Accurate, reproducible data

Discover productivity accelerate research

Cost saving	- Faster assay development - Reduced analyte-induced errors - Ability to use smaller sample volumes (~10 µL)
Time Saving	- Decreased incubation time - Parallel processing of 96 samples - Increased productivity
Low background	- Reduced non-specific binding - Improved analytical sensitivity
No matrix loss	- Improved consistency - Increased LC-MS instrument life span
No Clogging	- Microcolumn resistant to compression unlike resin-based support
Reproducible data	- Minimum analytical variability
Ready to use	- No need to aliquot like bead technology
Enhanced binding capacity	- Extended assay dynamic range - Improved signal
Additional features	- Versatility to integrate unique assay steps, such as heated - enzymatic processing

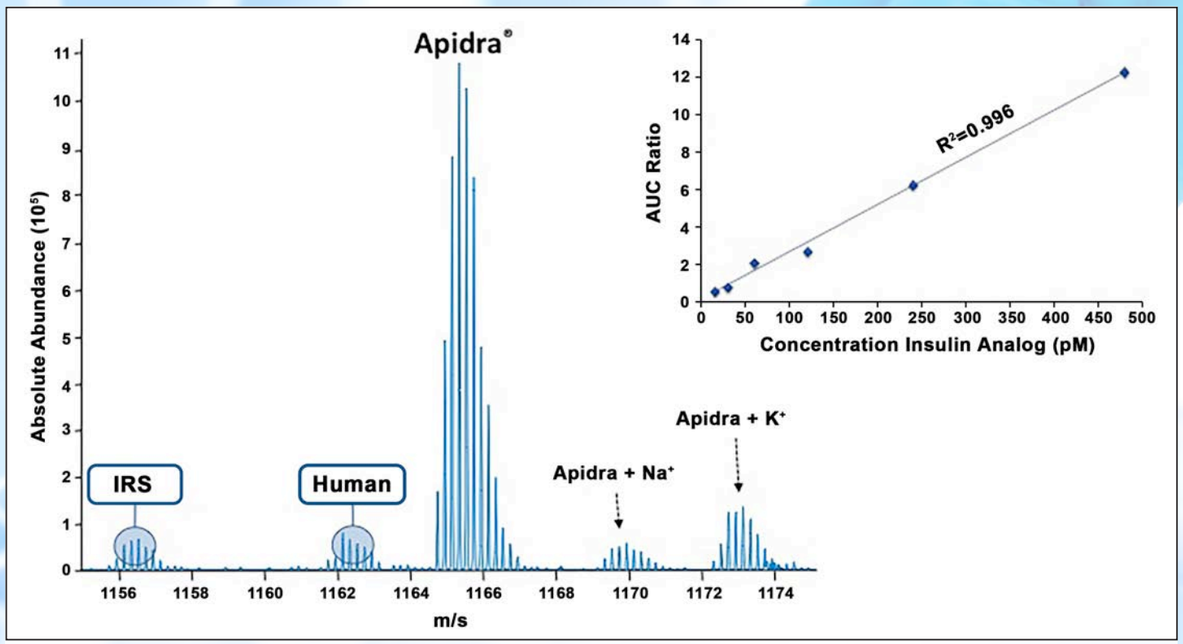
MSIA delivers cleaner analytes of interest for analysis, lower background, and increased reproducibility of data compared to bead technologies.



Flexibility in assay development

Depending upon the requirements of your experimental design, eluted analytes can be analyzed with different detection methods such as SDS-PAGE/ Western blot (for quick read out), UV/Vis or LC-MS (optimal method for simultaneously getting the high quality quantitative & qualitative data). Even for mass spectrometry detection, MSIA provides users the option to use different LC-MS detector configurations.

Whether you're interested in traditional bottom-up or intact detection, MSIA can be customized to suit your needs.

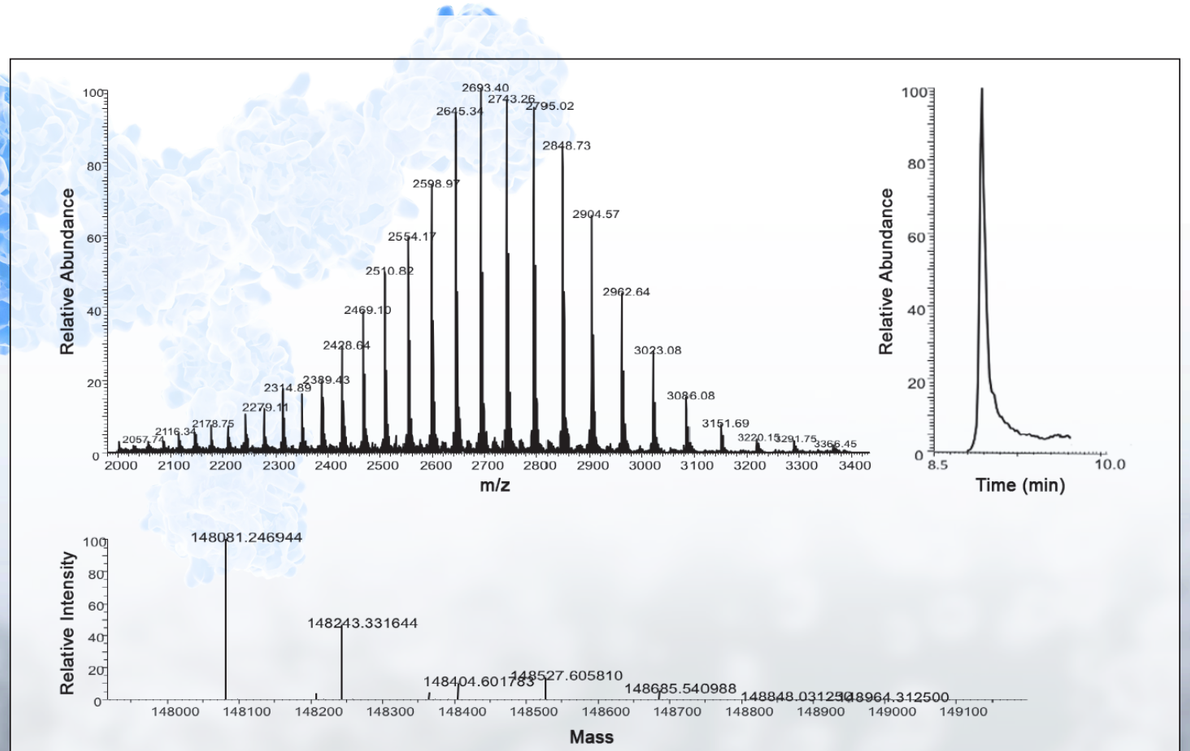


Enhanced specificity from hybrid workflow technology enables versatility in applications through simultaneous qualitative/quantitative detection. Insulin MSIA allows for the concurrent analyses of therapeutic and endogenous insulins at pg/mL levels. (IRS: Internal Reference Standard)

Ideal method for biologics discovery and development

The fast-paced nature of the biopharma drug discovery and development field needs sophisticated methods of large molecule bioanalysis, both at the affinity purification level, as well as MS detection.

The next generation LB-MSIA workflow for the Freedom EVO platform combines the robust nature of traditional ligand binding assays with high-resolution, accurate-mass (HR/AM) spectrometric detection. This combination provides a highly sensitive, accurate and reproducible method for the generation of high value data content for the analysis of protein biologics, such as therapeutic antibodies, antibody drug conjugates (ADC), and fusion proteins.



MSIA hybrid workflows for pre-clinical bio-analyses of protein therapeutics provide flexibility for generating data required to keep pace with the additional information needed for biologic therapeutics. The figure depicts the analysis of Humira (Adalimumab) antibody, the first fully human monoclonal antibody drug approved by the FDA.

Fast-track to success

With the MSIA Workflow for Freedom EVO Platform in your laboratory, coupled with expert application and technical support, know you are well placed to fast-track your large molecule bioanalysis.

Perform large molecule bioanalysis with ease and confidence

- High signal-to-noise ratio
- Highly sensitive detection
- Robust automation
- Absolute quantification
- Analytical specificity
- Detects multiple protein variants for qualitative and quantitative bioanalysis in a single assay
- Wide dynamic range
- Reproducible

Product information

MSIA microcolumns for immunoaffinity capture		
Compatible with Tecan Freedom EVO platform with MCA96 head		
Part #	**Description**	**Packaging**
992STR96	MSIA Streptavidin-EVO	Racked, pack of 96

MSIA D.A.R.T.'S for immunoaffinity capture		
Compatible with Thermo Scientific Versette Automated Liquid Handler & Thermo Scientific Finnipipette Novus i Multichannel Electronic Pipette		
Part #	**Description**	**Packaging**
991001096	MSIA D.A.R.T.'S, Insulin	Racked, pack of 96
991001024	MSIA D.A.R.T.'S, Insulin	Blister package, pack of 24
991CUS02	MSIA D.A.R.T.'S, Custom	Racked, pack of 96
991R	Reloadable rack	1 reloadable rack, MSIA D.A.R.T.'S not included
991PRT11	MSIA D.A.R.T.'S, Protein A	Racked, pack of 96
991PRT12	MSIA D.A.R.T.'S, Protein A	Blister package, pack of 24
991PRT13	MSIA D.A.R.T.'S, Protein G	Racked, pack of 96
991PRT14	MSIA D.A.R.T.'S, Protein G	Blister package, pack of 24
991PRT15	MSIA D.A.R.T.'S, Protein A/G	Racked, pack of 96
991PRT16	MSIA D.A.R.T.'S, Protein A/G	Blister package, pack of 24
991STR11	MSIA D.A.R.T.'S, Streptavidin	Racked, pack of 96
991STR12	MSIA D.A.R.T.'S, Streptavidin	Blister package, pack of 24

Automated Liquid Handling Platform		
Cat No.	**Description**	**Packaging**
Contact a Tecan Sales Representative	Tecan Automated Liquid Handling Platform Freedom EVO 100, 150, 200 (with MCA 96 Head attachment)	
650 – MSIA	Thermo Scientific MSIA Versette Automated Liquid Handler	

Multichannel Pipettes and Pipette Stand		
Cat No.	**Description**	**Packaging**
991S	Finnpipette Novus I Adjustable Pipette Stand	1 pipette stand
991SP12	Finnpipette Novus I Electronic 12-Channel Pipette, 30-300 µL and pipette stand	1 pipette and 1 pipette stand

Want to learn more?

Visit thermoscientific.com/MSIAStreptavidinEVO to learn more about MSIA Streptavidin EVO.
Visit tecan.com/lcms to learn more about the Freedom EVO platform for the MSIA microcolumns.
Products are intended for research only
For product inquiries or to request a sales quotation, please contact info.sandiego@thermofisher.com

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