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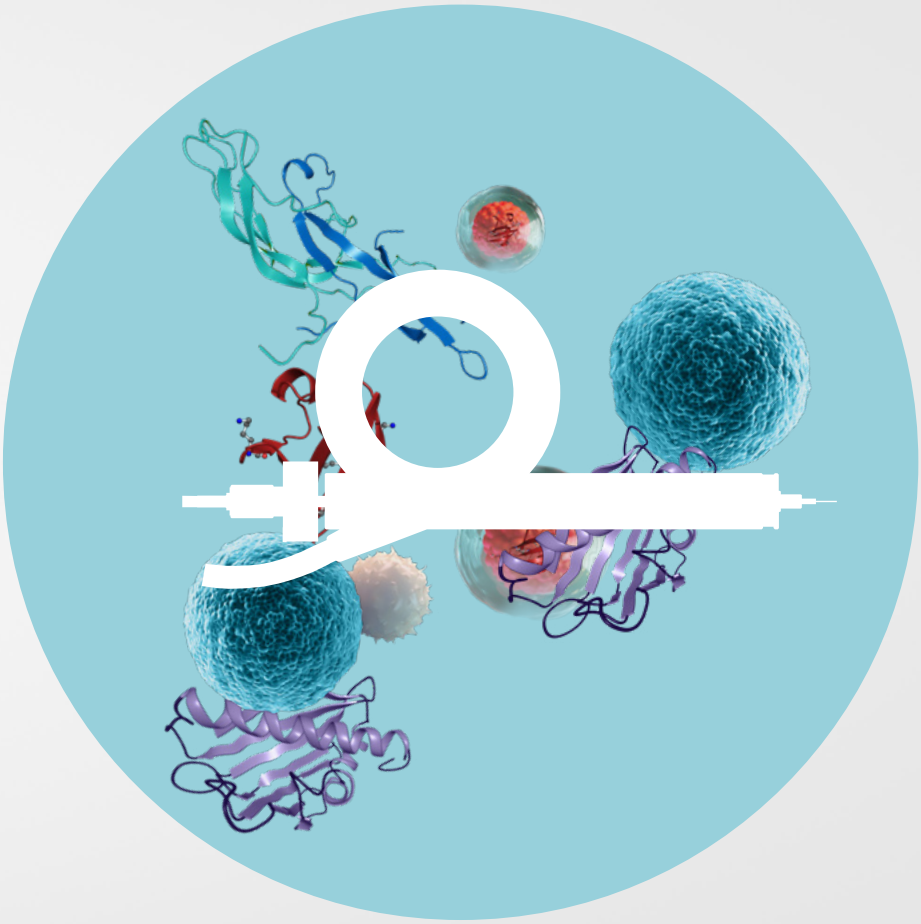


Low-flow

Connected chromatography solutions

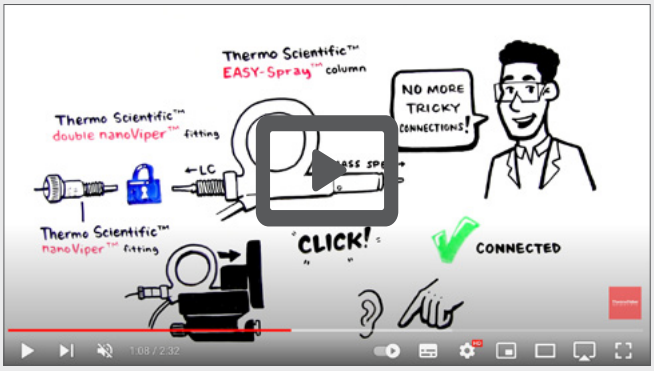
Low-flow columns and accessories

thermo scientific

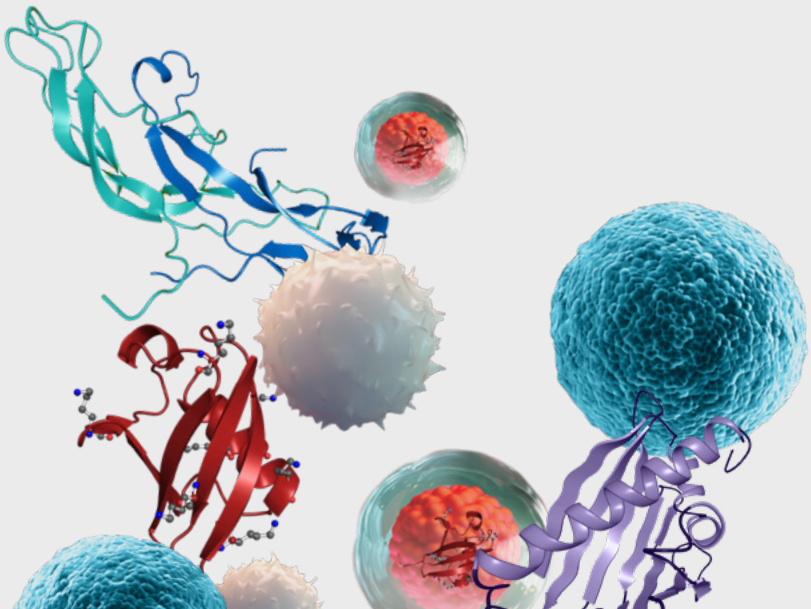
Introduction

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics, metabolomics, and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.

- Thermo Scientific™ EASY-Spray™ HPLC columns
- Thermo Scientific™ Double nanoViper™ HPLC columns

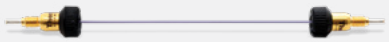


Video:
Low-flow HPLC columns connectivity

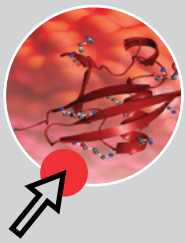


Section contents

Column selection guide

	Packed bed format	
	EASY-Spray	Double nanoViper
Technology		
Benefits	**Ease-of-use** • Click-and-Spray ion connection with EASY-Spray source • nanoViper connections • Integrated column and emitter • Integrated temperature control • For use with Thermo Scientific MS Systems	**Analytical flexibility** • Universal Thermo Scientific nanoViper Fingertight Fittings for column inlet and outlet • Simple zero-dead-volume (ZDV) connections • Separate emitters • Compatible with all low flow U/HPLC instruments
Application areas	**Bottom-up proteomics** PepMap Neo UHPLC columns are the latest addition to our portfolio. PepMap Neo columns are packed to higher pressure, which provides 1500 bar pressure rating, improved column-to-column consistency, and increased efficiency.	
	Top-down and middle-down proteomics The MAbPac capillary column is best suited for the characterization of intact proteins in top-down proteomics applications where sample amount is critically limited.	

Reference guide:
Low-flow chromatography consumables reference guide for LC-MS proteomics research



Flyer:
Low-flow HPLC columns. Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomics research

EASY-Spray HPLC columns

Ensure robust nano and capillary flow LC-MS analysis using Thermo Scientific™ EASY-Spray™ HPLC Columns. The integrated column/emitter design eliminates dead volume and is temperature-controlled for maximum reliability and performance. Rigorously tested to ensure maximum quality, these columns deliver maximum simplicity and ease-of-use.

The capillary flow HPLC columns provide sensitive protein, peptide, and monoclonal antibody (mAb) separation. They give proteomics researchers more than ever before: more throughput, more sensitivity, more separation power, and more ease of use.

Choose an EASY-Spray column when:

- You want simple connections with an EASY-Spray source. This is ideal for novice users.
- Sample amount is limited
- Analytical UHPLC does not provide sufficient sensitivity
- Workflow simplicity is key
- High sensitivity is required to identify proteins and peptides at low expression levels
- Analyses are done in a targeted and untargeted way for screening and verification

What makes an EASY-Spray column special?

Unique design provides uncompromised performance in an ease-of-use format for nano and capillary LC-MS analysis.

Features for optimum data quality:

- Simple connection to the LC and Thermo Scientific MS instruments
- Precision machined and positioned glass emitters
- Integrated nanoViper zero-dead-volume (ZDV) unions
- Integrated temperature control

Video:
Thermo Scientific EASY-Spray 150 mm LC columns

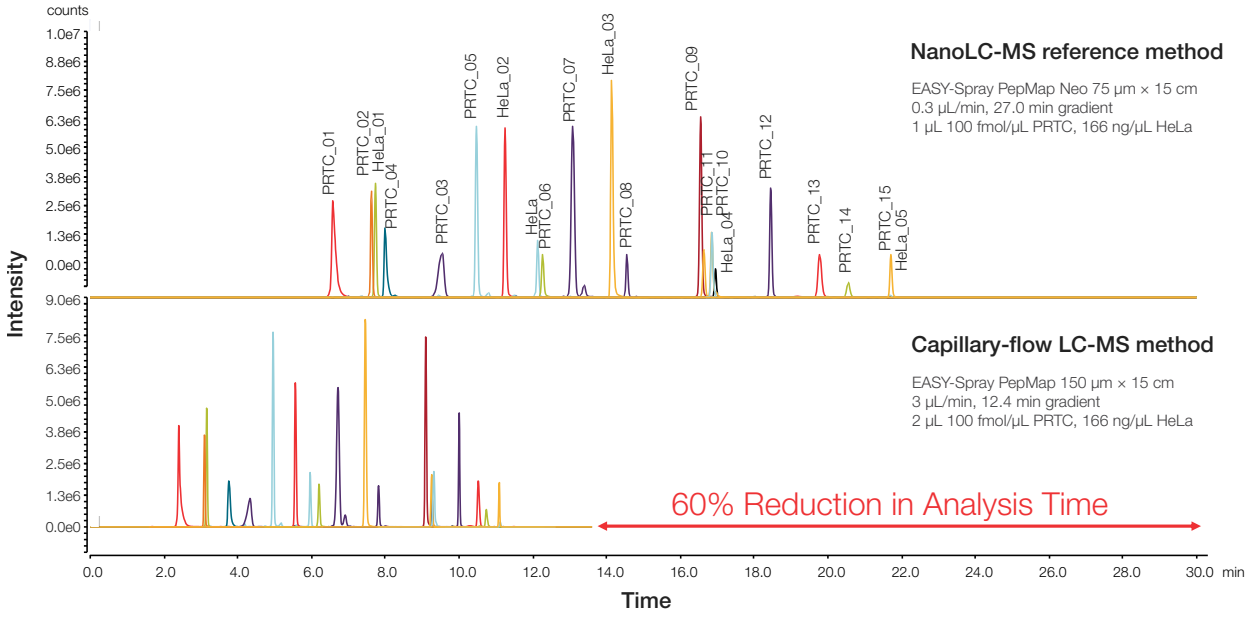
EASY-Spray HPLC columns

PepMap Neo HPLC columns
Bottom-up columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

The Thermo Scientific™ EASY-Spray™ PepMap™ Neo UHPLC columns are perfect for bottom-up proteomics. Packed at higher pressure and rated to 1500 bar, they provide consistent column-to-column performance, long column lifetime, and excellent efficiency. These benefits are true at any pressure.



The 60% reduction in total analysis time allows increasing the sample throughput moving from the nano- to the capillary-flow LC-MS method.

PepMap Neo columns

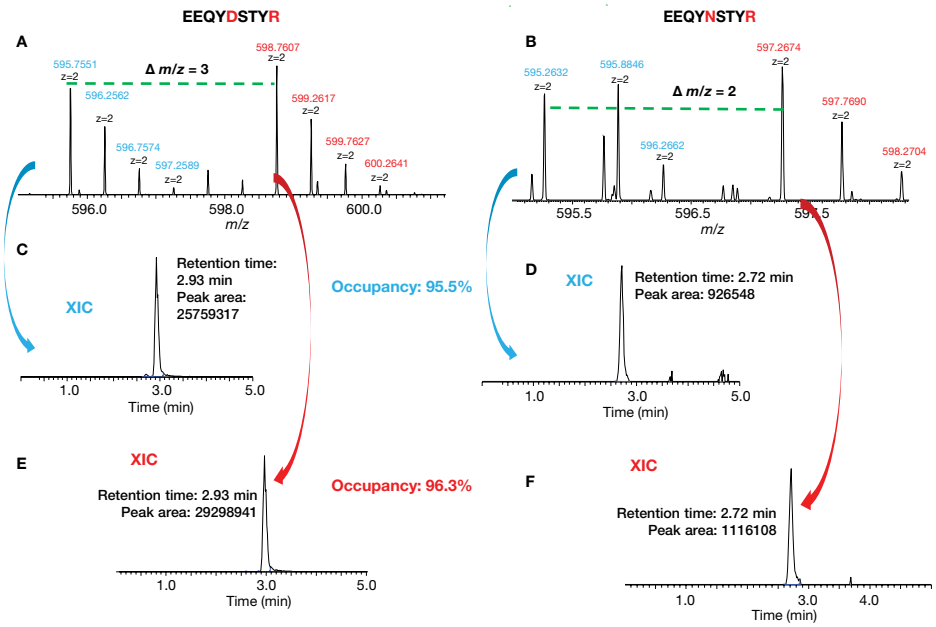
Format	Length (mm)	Column ID (µm)	Part number
Bottom-up columns	150	75	ES75150PN
	500	75	ES75500PN
	750	75	ES75750PN

MAbPac RP Cap HPLC columns
Top-down columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

The Thermo Scientific™ MAbPac™ RP capillary column is best suited for the characterization of intact proteins in top-down proteomics, clinical and anti-doping applications where sample amount is limited or sensitivity is crucial.



Calculation of site occupancy of N306 in Fab glycosylated mAb

MAbPac column

Format	Length (mm)	Column ID (µm)	Part number
Top-down column	150	150	ES907

Order now!

EASY-Spray HPLC columns
Continued

EASY-Spray accessories

Additional reading

Learn more at **thermofisher.com/lowflowlc**

For the best performance from your EASY-Spray column consider investing in these accessories.

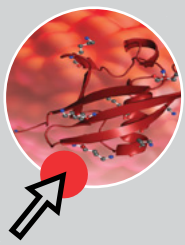
Thermo Scientific™ Acclaim™ PepMap™ traps

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Part number
PepMap Neo Trap Cartridge	N/A	5	300	5	N/A	174500
PepMap nanotrap 500 bar	Nut/sleeve	5	100	20	150	164199
PepMap nanotrap 500 bar	Double nanoViper	5	100	20	150	164750
PepMap nanotrap 500 bar	Double nanoViper	3	75	20	150	164535
PepMap nanotrap 1200 bar	Double nanoViper	3	75	20	70	164946
PepMap nanotrap 500 bar	Nut/sleeve	5	200	20	150	164213

PEEK Tubing and trap holder

Description	For use with	Part number
PEEK with nanoViper fittings 30 µm X 100 mm 2PK 1500 bar	Low-flow PepMap columns	174501
Trap holder + nanoViper fittings kit 1500 bar		174502

Reference guide:
Low-flow chromatography consumables reference guide for LC-MS proteomics research



Flyer:
Low-flow HPLC columns. Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomics research

Double nanoViper columns

The Thermo Scientific™ Viper™ and Thermo Scientific™ nanoViper™ Fingertight Fitting Systems provide tool-free connections designed to be used for the entire fluidic pathway in LC systems to improve chromatographic results.

Virtually without any dead-volume, Viper and nanoViper fittings combine usability with high performance. Viper and nanoViper connections can be used on all standard LC modules, valves, and columns quickly, independent of different connection geometries and system backpressures. Dedicated capillary kits for standard LC system configurations and application-specific setups enable high qualitative and reproducible results for all flow rates and pressure ranges.

Choose these columns when:

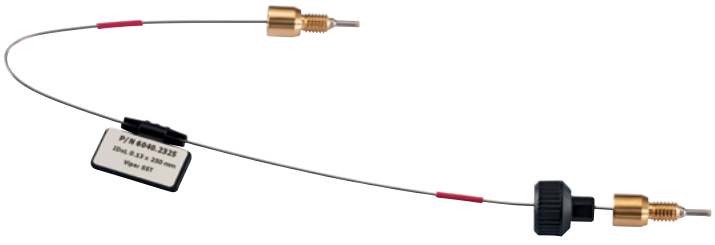
- Maximum flexibility is required
- Changing the emitter and column independently is important

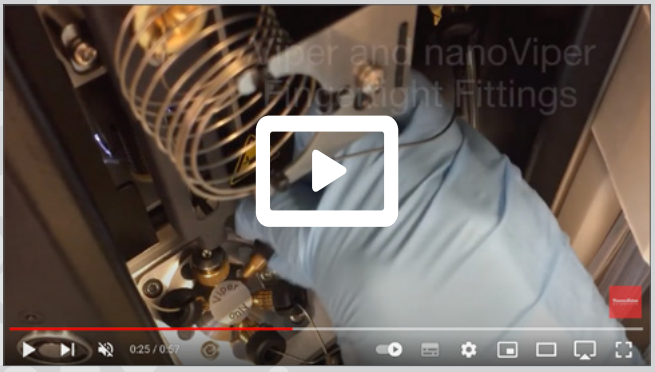
What makes these columns special?

These stand-alone nano-, capillary, and micro-flow columns are:

- Designed with single nanoViper and double nanoViper fingertight fittings for trouble-free connection
- For robust separation in proteomics research, drug discovery, and high-throughput proteomics laboratoriesl

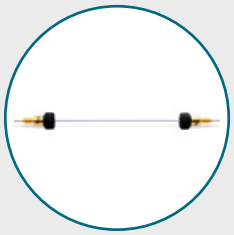
Product specifications:
Viper and nanoViper
Fingertight
Fitting Systems





Video:
Discover a better
LC connection

Double nanoViper columns

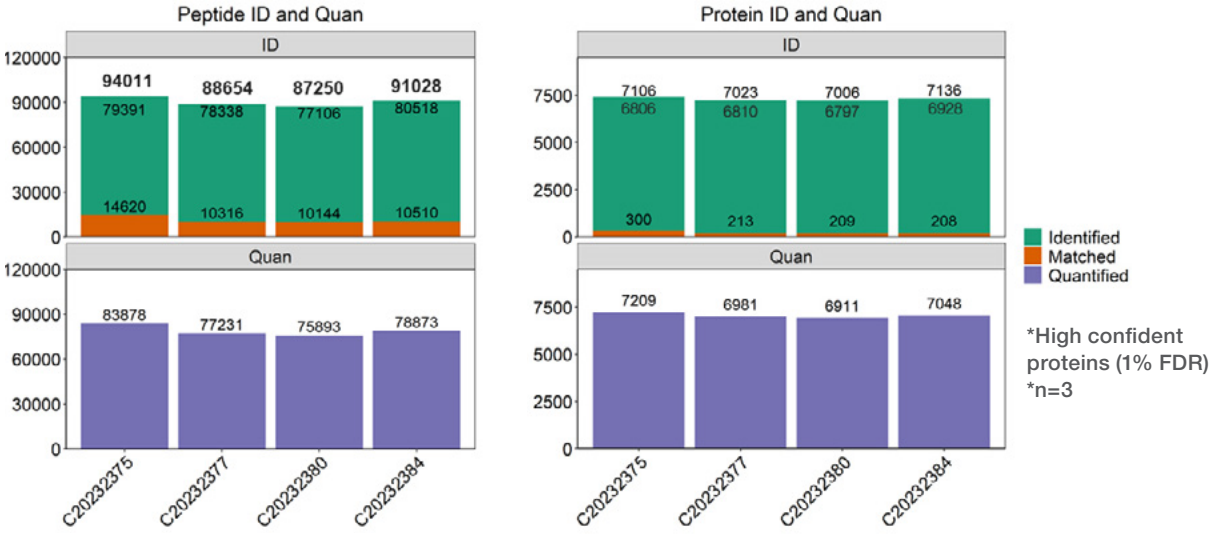


Double nanoViper PepMap Neo UHPLC columns
Bottom-up columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

Separate challenging peptide mapping samples with Thermo Scientific™ Double nanoViper™ PepMap™ Neo UHPLC columns. These columns feature easy connectivity, high reproducibilty, and excellent separations. Our Neo columns are packed to higher pressure and provide 1500 bar pressure capability, improved column-to-column consistency, and increased efficiency. The column media is manufactured and selected to exacting standards and packed at high pressure, resulting in enhanced peak symmetry, resolution, and column-to-column reproducibility that allows you to obtain greater sample coverage and sample insights.



*High confident proteins (1% FDR)
*n=3

Reproducible identification and quantification of HeLa peptides and proteins over 4 EASY-Spray PepMap Neo columns while using Vanquish Neo UHPLC system coupled with the Orbitrap Exploris 480 mass spectrometer.

Double nanoViper PepMap Neo columns

Format	Length (mm)	Column ID (µm)	Part number
Bottom-up columns	150	75	DNV75150PN
	500	75	DNV75500PN
	750	75	DNV75750PN

Double nanoViper columns
Continued

MAbPac RP Cap HPLC columns
Top-down columns

Additional reading

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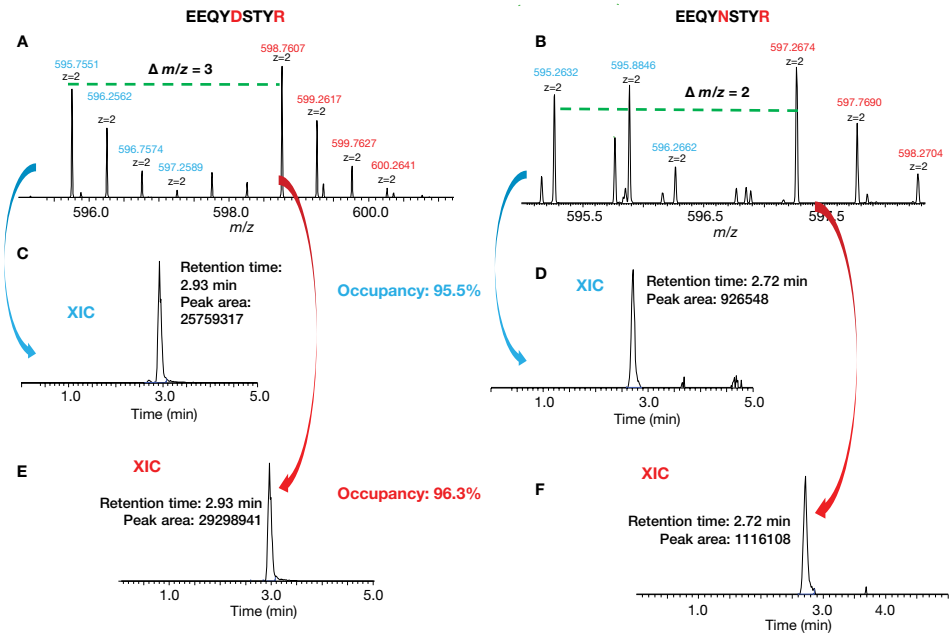
The Thermo Scientific MAbPac RP capillary column is best suited for the characterization of intact proteins in top-down protemics, clinical and anti-doping applications where sample amount is limited or sensitivity is crucial.



Calculation of site occupancy of N306 in Fab glycosylated mAb

MAbPac column

Format	Length (mm)	Column ID (µm)	Part number
Top-down column	150	150	164947

Order now!

Double nanoViper columns
Continued

LC-MS connection accessories and emitters

These emitters, nanoViper tubing kits, and unions offer easy connection from your LC system to an EASY-Spray source.

Acclaim PepMap traps and nanotraps

Description	For use with	Part number
Two Viper unions	Double nanoViper columns	6040.2304
NanoViper tubing 20 µm x 550 mm		6041.5260
Emitter: 10 µm I.D.		ES993
Emitter: 15 µm I.D		ES994

Traps and accessories

For the best performance from your double nanoViper column consider investing in these nanotraps.

Acclaim PepMap traps and nanotraps

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Part number
PepMap Neo Trap cartridge	N/A	5	300	5	N/A	174500
PepMap nanotrap 500 bar	Nut/sleeve	5	100	20	150	164199
PepMap nanotrap 500 bar	Double nanoViper	5	100	20	150	164750
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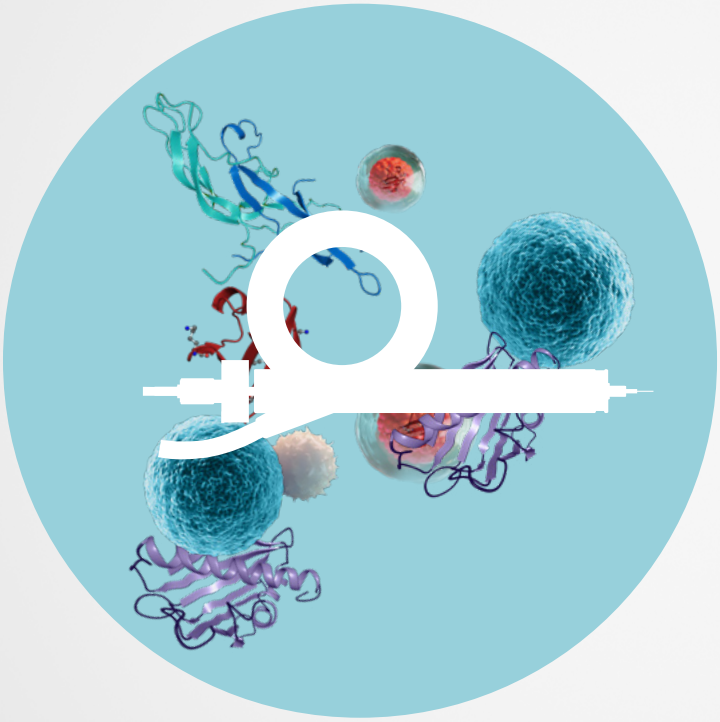

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