



Introducing EXP[®]
the new gold standard of
extreme pressure chromatography
hardware and consumables.

UHPLC



extreme pressure

Welcome to the new gold standard of ultra high pressure liquid chromatography (UHPLC) hardware and consumables. Optimize Technologies' EXP product family includes fittings, filters and packed-bed products which offer unparalleled convenience and ease of use through exciting new patented and patent-pending innovations. This advanced system is the first design to provide reusable hand-tight connections and hand-tight cartridge replacement for UHPLC. These innovations significantly accelerate challenging UHPLC applications and reduce costly instrument downtime.

Revolutionary features include:

- EXP titanium/PEEK hybrid ferrule offering repeated zero-dead-volume connections, hand-tight to 8,700 psi or wrench-tight to 20,000 psi (1,400+ bar).
- EXP holders and cartridges with ultra-low internal swept volume and hand-tight cartridge changeover for use to 20,000 psi (1,400+ bar).

This rare combination of attributes enables our EXP components to provide excellent protection with negligible impact on analyte retention and peak symmetry. The elegant design of our EXP line showcases sleek architecture for easy installation in restricted instrument compartments, without compromising accessibility. Our commitment to exceed industry standards yields an entire EXP product family conservatively rated to 20,000+ psi (1,400+ bar). The EXP product line, as well as virtually all Optimize products, are proudly designed and manufactured in our facility in Oregon, USA*.

From the name you've trusted for 25 years of precision innovation in HPLC accessories and consumables, EXP represents the culmination of a generation of research and development. High standards consistently guarantee that every product bearing the EXP trademark exemplifies our quality control, responsive customer service and expert technical support. Optimize is always here to back you up.

* 100% of all Optimize **EXP** products are made in the U.S.A. from raw materials originating in the U.S.A.
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The Foundation of the EXP Family

Optimize Technologies recognizes the challenges faced by scientists and technicians in the constantly evolving field of chromatography and LC instrumentation. Ultra high pressure liquid chromatography is one example of how these advances present an opportunity for innovative products.

In response to evolving UHPLC technologies, Optimize delivers with the EXP Titanium PEEK Hybrid ferrule. The ingenuity of the EXP ferrule lies in a design which adjusts to any 10-32 port depth and can subsequently be removed and reused in a different port while still maintaining adjustability. The EXP ferrule provides the necessary zero-dead-volume seal to allow connections beyond 20,000+ psi (1,400+ bar).

The EXP ferrule, with its innovative capabilities, forms the foundation of our EXP product family. A quick look through these pages shows that the EXP ferrule is incorporated into the entire EXP product line, demonstrating its wide array of applications. If you are interested in seeing how our EXP products can work for you, please contact Optimize Technologies or one of our authorized dealers. At Optimize, we strive to develop new products that are straight forward, yet elegant, solutions to daily issues in the lab.

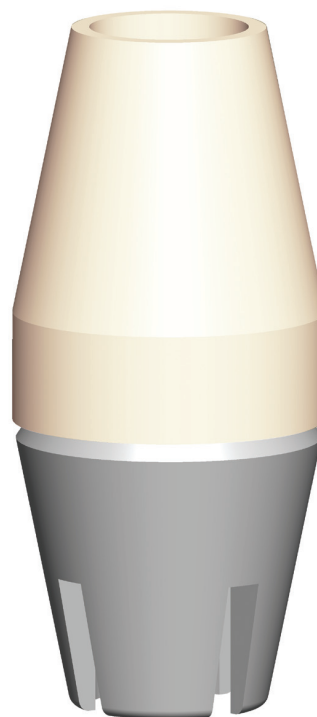
ADVANTAGES OF THE EXP FERRULE

- Rated to 20,000+ psi (1,400+ bar)
- Tested to 30,000 psi
- Auto-adjusting ZDV connection
- Intended for many repeat uses
- No more cut-off and replacement of swaged ferrules



actual size

A Perfect Seal with every connection



PEEK:

Proven sealing ability beyond 20,000 psi (1,400 bar).

Titanium:

Enables the swage to be released and reset. Intended for many repeat connections.

Patents Pending



EXP fitting system

The EXP Fitting System is the premier adjustable nut and ferrule compression fitting for extreme high-pressure connections between 1/16" tubing and any 10-32 port. The key advantages of the EXP fitting lie at the confluence of simplicity and versatility.

The patent-pending Titanium Hybrid Ferrule integrates the resilience of titanium with the proven sealing ability of PEEK in a superb one-piece design. The Hybrid Ferrule provides a perfect seal with every connection, yet the swage can be released without tools to adjust to the different port depths of various hardware. This adjustability provides unlimited value through repeated zero-dead-volume connections with any 10-32 port configuration.

With the EXP Fitting System, you no longer have to clip off and replace swaged ferrules or wonder if you are achieving the best possible connection.

ADVANTAGES OF EXP FITTINGS

- Available in hand-tight & wrench-tight configurations
- Rated to 20,000+ psi (1,400+ bar)
- Tested to 30,000 psi
- Auto-adjusting ZDV connection
- Intended for many repeat uses

EXP Titanium Hybrid Ferrules

15-24-03831	Titanium Hybrid Ferrule
15-24-03832	Titanium Hybrid Ferrules, 10/Pk

HAND-TIGHT EXP Fittings

15-20-03888	10-32 Hand-Tight Nut & Titanium Hybrid Ferrule
15-20-03930	10-32 Hand-Tight Nuts & Titanium Hybrid Ferrules, 10/Pk

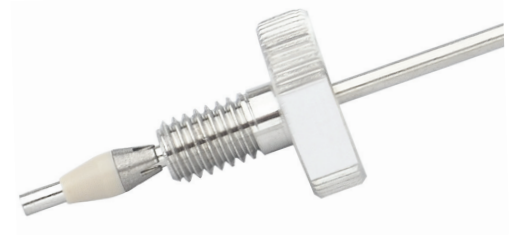
HEX HEAD EXP Fittings

15-20-04120	10-32 Standard Hex Head Nut & Titanium Hybrid Ferrule
15-20-03839	10-32 Hex Head Nut, Short
15-20-03840	10-32 Short Hex Head Nuts & Titanium Hybrid Ferrules, 10/Pk
15-20-03833	10-32 Hex Head Nut, Standard
15-20-03834	10-32 Standard Hex Head Nuts & Titanium Hybrid Ferrules, 10/Pk
15-20-03841	10-32 Hex Head Nut, Long
15-20-03842	10-32 Long Hex Head Nuts & Titanium Hybrid Ferrules, 10/Pk

HAND-TIGHT EXP Coupler

15-20-04128	1/16" OD x 0.005" ID x 5 cm Stainless Steel Tubing (Includes 2 EXP Hand-Tight Fittings)
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HAND-TIGHT
hand-tight to 8,700+ psi
wrench-tight to 20,000+ psi



HEX HEAD
rated to 20,000+ psi



Patents Pending

EXP stem filter

Modern UHPLC and UHPLC/MS instrumentation pushes the envelope in fluid handling with tiny passages and extremely high pressures. At any time, an unprotected system is virtually a stray 1 μ m seal fragment away from failure, loss of priceless data continuity and subsequent troubleshooting and repair. The best assurance against this costly prospect comes from safeguarding your system with thorough filtration.

The EXP Stem Filter features a choice of frit porosities integrated with our patented auto-adjusting stem for repeated ZDV connections with any 10-32 port. The entire filter stem and reusable holder are only slightly larger than a standard HPLC fitting. This slim architecture allows it to easily fit into crowded instrument compartments, tightly spaced injection ports, and anywhere else you need an extra level of protection against clogging and contamination. The EXP Stem Filter is an ideal solution to protect expensive UHPLC columns, injectors, autosamplers, and MS electrospray tips without extra-column effects.

When tightened by hand, the EXP Stem Filter seals to 8,700+ psi. The reusable holder hardware also incorporates wrench flats to enable flawless sealing to 20,000+ psi (1,400+ bar). The EXP Stem Filter is the ultimate low-impact protection for expensive UHPLC and MS equipment, assuring trouble-free performance so you can concentrate on the data, not troubleshooting.

ADVANTAGES OF EXP STEM FILTERS

- Approved for use at 20,000+ psi (1,400+ bar)
- Hand-tight and wrench-tight configuration
- Reusable holder intended for many repeat uses
- Auto-adjusting ZDV connections
- Low-dispersion cartridges
- Custom volumes/porosities available
- Ultra-low .27 μ L total swept volume

EXP Stem Filter Kit

15-04-04122 0.2 μ m, EXP Stem Filter Kit

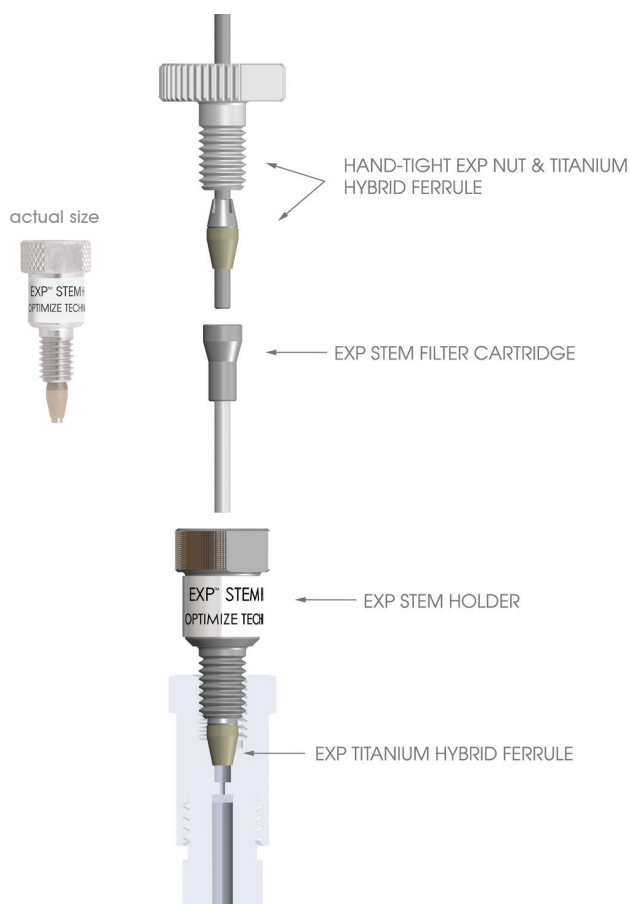
15-04-04123 0.5 μ m, EXP Stem Filter Kit

Includes: Holder, 3 Stem Filter Cartridges and Fittings

EXP Stem Filter Cartridges

15-04-04117 0.2 μ m, EXP Stem Filter Cartridge, 5/Pk

15-04-04119 0.5 μ m, EXP Stem Filter Cartridge, 5/Pk



U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954
and other U.S. and foreign patents pending.

EXP pre-column filter

The EXP Pre-Column Hand-Tight Filter is ideal for protecting small-particle UHPLC columns at extreme pressures. Such techniques analyze samples in the most demanding applications, which can decrease the life of these expensive columns. EXP Pre-Column Filters help extend that life and protect your column investment without sacrificing performance. Free-turn® architecture allows the user to change cartridges by hand without breaking fluid connections on the holder inlet/outlet.

EXP Pre-Column Filter holders are available with Titanium Hybrid ferrules for easy direct connection to any 10-32 port. The filter holder comes as a complete package including fittings to provide repeated zero-dead-volume column connections.

ADVANTAGES OF EXP PRE-COLUMN FILTERS

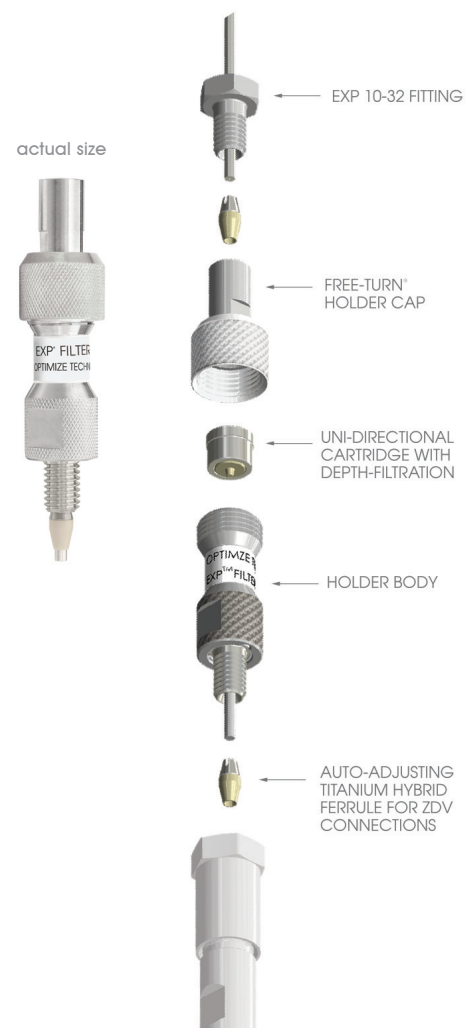
- Approved for use at 20,000+ psi (1,400+ bar)
- Hand-tight filter replacement - NO TOOLS!
- Depth filtration maximizes capacity
- Auto-adjusting ZDV column connection
- Custom volumes/porosities available
- Low-volume, low-dispersion cartridges
- Hardened stainless steel end cap eliminates galling

EXP Pre-Column Filter Holder

15-04-03837 EXP Pre-Column Filter Holder (Fittings Included)

EXP Pre-Column Filter Cartridges

15-04-03093 0.5 µm, EXP Filter Cartridge, 5/Pk
 15-04-03096 0.2 µm, EXP Filter Cartridge, 5/Pk
 15-04-03094 0.5 µm, EXP Filter Cartridge, 10/Pk
 15-04-03097 0.2 µm, EXP Filter Cartridge, 10/Pk



U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954 and other U.S. and foreign patents pending.

EXP stem traps

The entire EXP Stem Trap and reusable holder are only slightly larger than a standard HPLC fitting. Its slim architecture allows it to easily fit into crowded instrument compartments or to connect directly to tightly-spaced injection ports. When tightened by hand, the EXP Stem Trap seals to 8,700+ psi. All configurations incorporate wrench-flats to enable flawless sealing to 20,000+ psi (1,400+ bar). The unique packed floating stem installs directly into any 10-32 port and automatically adjusts to provide a perfect ZDV connection.

Our specialized features, patented technology, precision engineering, and state-of-the-art manufacturing make the new EXP Stem Trap an unbeatable choice for Ultra High Pressure trapping applications.

ADVANTAGES OF EXP STEM TRAPS

- Hand-tight and wrench-tight configurations
- Intended for many repeat uses
- Auto-adjusting ZDV connection
- Rated to 20,000+ psi (1,400+ bar)
- Custom packing available
- Bed volumes from 0.17 μL to 2.6 μL
- Low-volume, low-dispersion cartridges



EXP STEM TRAP KIT / REPLACEMENT STEM SELECTION GUIDE

	Bed Volume	Suggested Max Load Rate**	Dimensions	Dimension Code	Phase Code	Phase	
Stem Trap Kit	0.17 μL	60 $\mu\text{L}/\text{min}$	0.13 x 13.5mm	0 3 9 9 7	H A	C18	2.7 μm HALO
Replacement Stems*	0.17 μL			0 3 9 9 2	H B H D	C8 HILIC	
Stem Trap Kit	0.33 μL	120 $\mu\text{L}/\text{min}$	0.18 x 13.5mm	0 4 0 0 3	H E H F H N	RP-Amide Phenyl-Hexyl Peptide ES-C18	
Replacement Stems*	0.33 μL			0 4 0 0 1			
Stem Trap Kit	0.68 μL	250 $\mu\text{L}/\text{min}$	0.25 x 13.5mm	0 4 0 0 9	H G	C18	3 μm EXP
Replacement Stems*	0.68 μL			0 4 0 0 8	H H H I H J	C8 C4 HILIC	
Stem Trap Kit	1.5 μL	500 $\mu\text{L}/\text{min}$	0.36 x 13.5mm	0 4 0 1 5	H K H L H M	Phenyl-Hexyl SAX SCX	
Replacement Stems*	1.5 μL			0 4 0 1 4			
Stem Trap Kit	2.6 μL	1mL/min	0.51 x 13.5mm	0 4 0 2 1			
Replacement Stems*	2.6 μL			0 4 0 2 0	E S	Custom	

For bed volume and phase requirements, please refer to the selection guide on the right. Custom packing is also available, please contact us for details.

Example: a three pack of 0.17 μL Stem Traps packed with HALO[®] C8 would have part number 15-03992-HB.

Additional EXP Stem Holders

15-02-03996 EXP Stem Holder (Fittings Included)



actual size

15- -
Part Number

* Includes 3 replacement stems. To be used with reusable EXP Stem holder only.

** Suggested max load rate is based on 60/40 Acetonitrile/Water mobile phase.

U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954 and other U.S. and foreign patents pending.

EXP trap columns

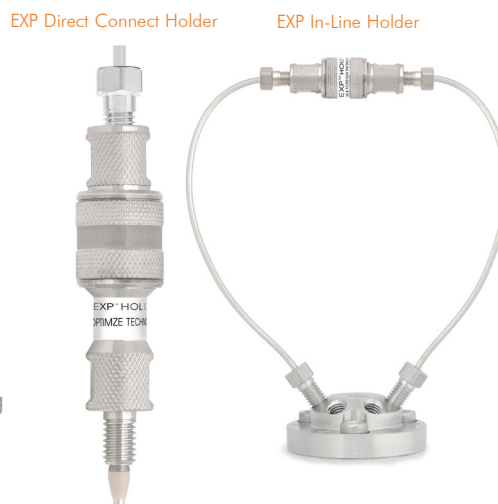
The patent-pending Hand-Tight EXP Trap Column is rated for use at 20,000+ psi (1,400+ bar). This unique design connects directly to any injection valve (with 10-32 threads) or in-line with 1/16" stainless tubing for unparalleled convenience and efficiency.

The EXP Cartridge System enables chemists to quickly remove detergents or salts which can affect the ionization process in MS work. This trapping technique can concentrate the sample directly on-line, allowing for increased recovery of precious sample material compared to off-line techniques. On-line trapping readily lends itself to automation for high-throughput analysis in UHPLC/MS applications. Free-turn® architecture allows the user to change cartridges by hand without breaking fluid connections on the holder inlet/outlet.

Our specialized features, patented technology, precision engineering, and state-of-the-art manufacturing make the new EXP Trap Column an unbeatable choice for Ultra High Pressure trapping applications.

ADVANTAGES OF EXP TRAP COLUMNS

- Hand-tight trap replacement - NO TOOLS!
- Rated to 20,000+ psi (1,400+ bar)
- Uni-directional cartridge
- Auto-adjusting ZDV connections
- Custom packing available
- Bed volumes from 4 µL to 100 µL
- Hardened stainless steel end cap eliminates galling



actual size

EXP Holders

15-02-03956	EXP Direct-Connect Holder (Fittings Included)
15-02-03946	EXP In-Line Holder (Fittings Included)
15-02-04041	EXP All-In-One Holder Kit (Includes: In-Line and Direct-Connect Holder Components)

For bed volume and phase requirements, please refer to the selection guide on the right. Custom packing is also available, please contact us for details.

Example: a three pack of 4 µL Cartridges packed with HALO® C8 would have part number 15-03964-HB.

EXP TRAP CARTRIDGE SELECTION GUIDE

Bed Volume	Suggested Max Load Rate*	Dimensions	Dimension Code	Phase Code	Phase		
3 PACKS	4µL	2mL/min	1.0 x 5mm	0 3 9 6 4	HA HB HD HE HF HN	C18 C8 Hilic Rp-Amide Phenyl-Hexyl Peptide ES-C18	2.7µm HALO®
	10µL	4mL/min	1.5 x 5mm	0 3 9 6 9			
	20µL	6mL/min	2.1 x 5mm	0 3 9 7 3	HG HH HI HJ	C18 C8 C4 Hilic	3µm EXP®
	40µL	8mL/min	3.0 x 5mm	0 3 9 7 8	HK HL HM	Phenyl-Hexyl SAX SCX	
	100µL	10mL/min	4.6 x 5mm	0 3 9 8 3	E S	Custom	



* Suggested max load rate is based on 60/40 Acetonitrile/Water mobile phase.

U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954 and other U.S. and foreign patents pending.

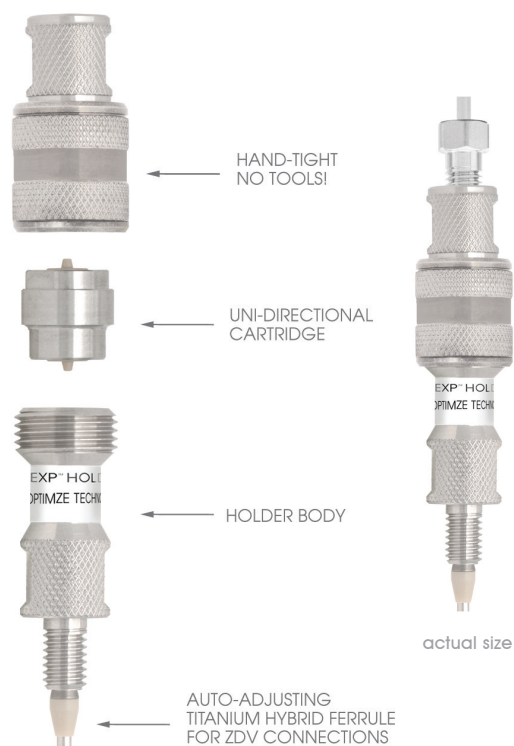
EXP guard columns

The EXP Guard Column cartridge system is rated to 15,000 psi with hand-tight replaceable cartridges. This unique design connects directly to any UHPLC column with the auto-adjusting Titanium Hybrid Ferrule and EXP[®] Fittings, providing repeated zero-dead-volume connections and easy adjustability between various column types.

Free-turn[®] architecture allows the user to change cartridges by hand without breaking fluid connections on the holder inlet/outlet. The combination of low-dispersion and ultra high-pressure capabilities provides effective protection with negligible effects on retention time, plate count, and peak shape.

ADVANTAGES OF EXP GUARD COLUMNS

- Hand-tight guard replacement - NO TOOLS!
- Hardware rated to 20,000+ psi (1,400+ bar)
- Packed guard rated for routine use to 15,000 psi (1,000 bar)
- 1.4 μ L Swept Volume (excluding packed bed)
- Hardened stainless steel end cap eliminates galling
- Low-volume, low-dispersion cartridges
- Auto-adjusting ZDV column connection
- Custom packing available



EXP Holder

15-02-03956

EXP Direct Connect Holder
(Fittings Included)

For bed volume and phase requirements, please refer to the selection guide on the right. Custom packing is also available, please contact us for details.

Example: a three pack of 2.1 x 5 mm with C8 Phase (1.8 μ m) would have part number 15-04104-HB.

EXP GUARD CARTRIDGE SELECTION GUIDE

	Dimension	Dimension Code	Phase Code	Phase	
3 PACKS	1.0 x 5 mm	0 4 1 0 0	H A H B H C H D	C18 C8 C4 HILIC	1.8 μ m
	1.5 x 5 mm	0 4 1 0 2			
	2.1 x 5 mm	0 4 1 0 4	H E H F H G H H	C18 C8 C4 HILIC	3 μ m
	3.0 x 5 mm	0 4 1 0 6	H I H J H K	Phenyl-Hexyl SAX SCX	
4.6 x 5 mm	0 4 1 0 8	E S	Custom		

15-	□	□	□	□	□	-	□	□
Part Number								

U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954
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The best way
to predict the
future is to
invent it.

Team with Optimize Technologies to bring your UHPLC concepts to reality – no challenge is too small or too large. We offer state-of-the-art manufacturing and design on-site in Oregon, USA, and our highly experienced engineers, design specialists, chemists, and machinists have exactly what it takes to bring ideas to fruition.

- Need a check valve rated to 30,000+ psi (2,100+ bar)?
- Would a quick-connect UHPLC column improve productivity?
- Interested in upgrading your current HPLC system to perform at UHPLC pressures?

Contact us to discuss ways we can incorporate Optimize Technologies' patented features into your custom applications. Some of the key industries we serve include: Chromatography, Mass Spectrometry, Pharmaceutical Research, Clinical, Environmental, Petrochemical, Defense, and other High Pressure Fluidics. We look forward to helping you optimize your laboratory.