

Perfusion with clean HFF

Re-Invented Perfusion-Single-Use-Bioreactors (P-SUBs)

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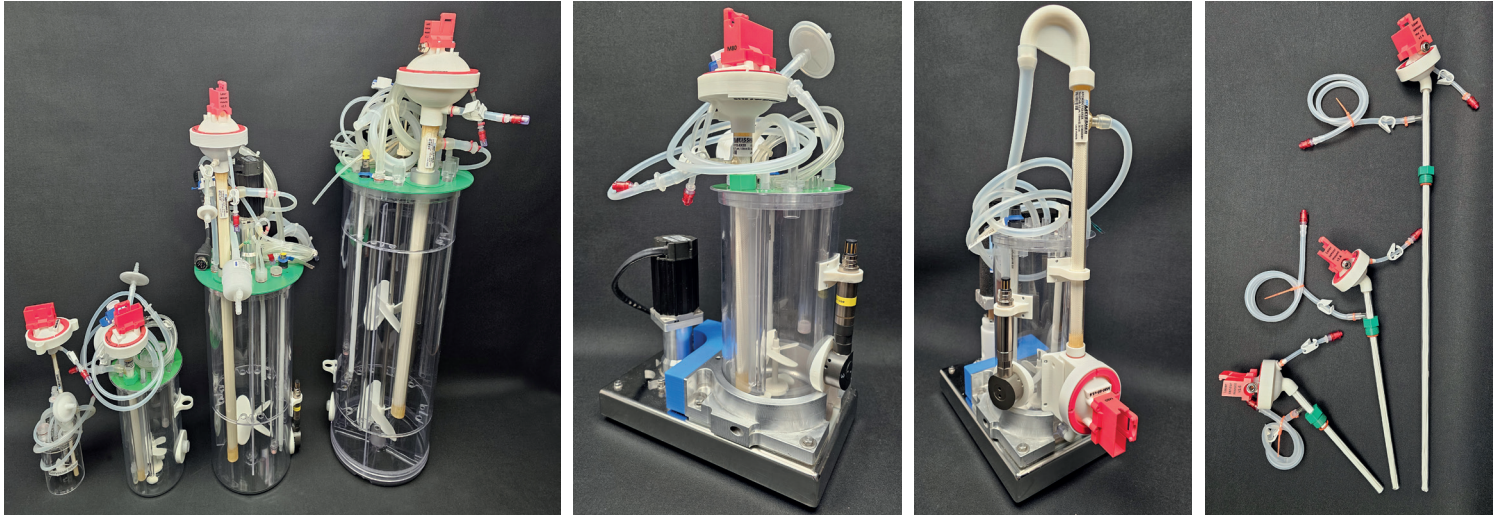
The industry is continuously facing the well known problem of cleaning and keep the Hollow-Fiber-Filter clean in upstream intensification.

Lets face it – have any of the existing technologies given us a viable solutions?

A reliable platform is required.

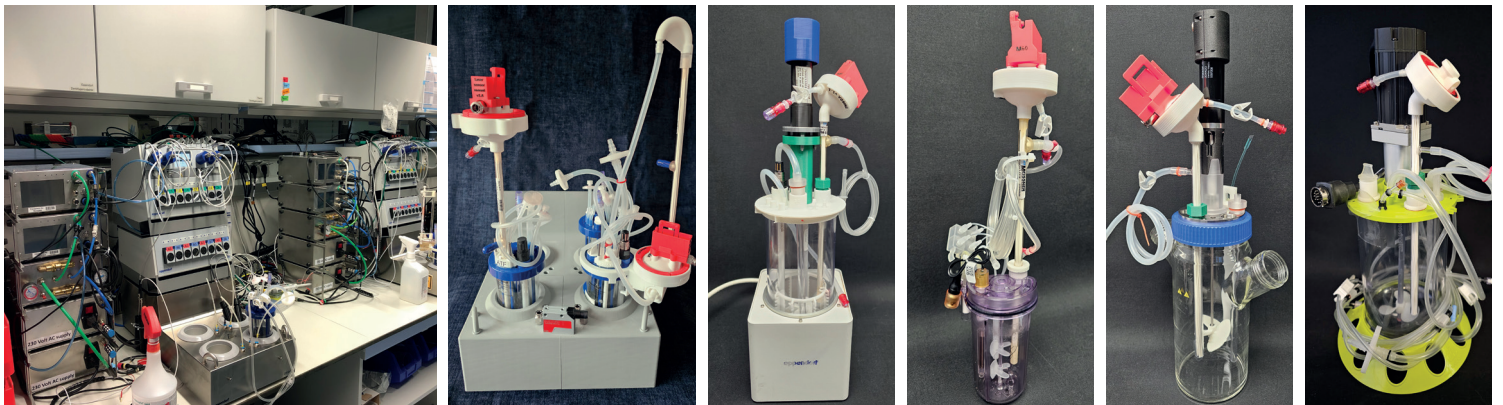
The latest invention – P-SUBmerged – features LASER guided Thalia diaphragm Single-Use-Pump. Specifically designed to alter accurately

broth velocities between many gentle harvest cycles to a few fast cleaning cycles flushing out HFF fouling.



Benefits of the ATF-SUBmerged™ and TFF-Integrated™ for expression are:

- **Avoid HFF fouling** – freedom to select any broth velocity flushing out debris from inside the HFF by LASER guided Thalia.
- **Avoid dead volumes** – skip hoses, fittings – SUBmerged SeptraPor® HFF integrated with Thalia eliminates dead volumes.
- **Avoid cell death** - innovative inverted Thalia pump arranged above the SUBmerged SeptraPor cannot accumulate cells .
- **Reduce shear stress** – eliminating hoses, fittings with SeãraPor HFF SUBmerged into the broth reduces shear stress.
- **SUBmerged** – HFF cartridge inlet directly in the broth inside the SUB – no hoses, fittings needed = simplified, reliable.



- **We are allowed to show photo from the Merck Darmstadt facility.** The setup combines PerfuseCells highly customized CellMembra and CellRetention BioBLU-300 P-SUBs controlled by combined DasGip Process-Control-System and Clotho Drive Units each operating 2 x 4 P-SUBs in parallel. The 8 x P-SUPS are controlled by dual Clotho towers via OPC-UA to-and-from DASware.
- SciVario drive the RE30 motor and ThermoBlock incapsulating a OD110 mm CellRetention P-SUB with Meissner® SeptraPor HFF and Thalia pump.
- The 250 ml mini SUB for Modular converted by SeptraPor and Thalia to a P-SUB for full freedom.
- One liter glass STR converted to perfusion with the ATF-SUBmerged PG13 DIY kit.
- CellReady SUB converted to perfusion with the ATF-SUBmerged PG13 DIY kit.

Much more details to be found on www.PerfuseCell.com