

Application Note

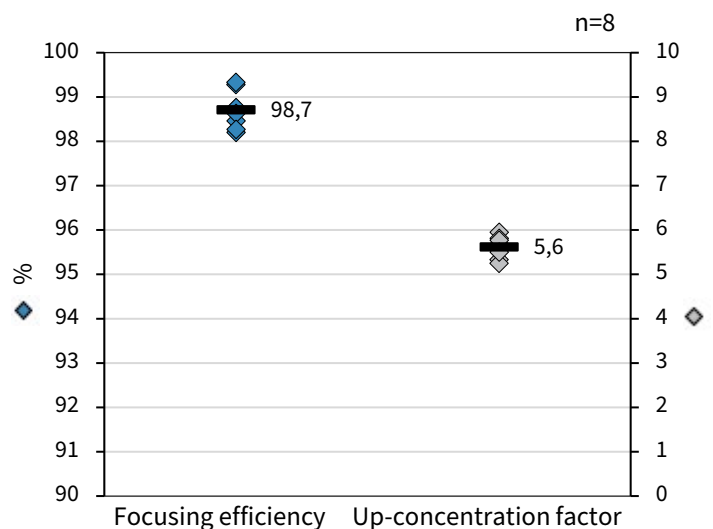
OEM

HIGH-THROUGHPUT PROCESSING FOR CELL THERAPY SYSTEMS

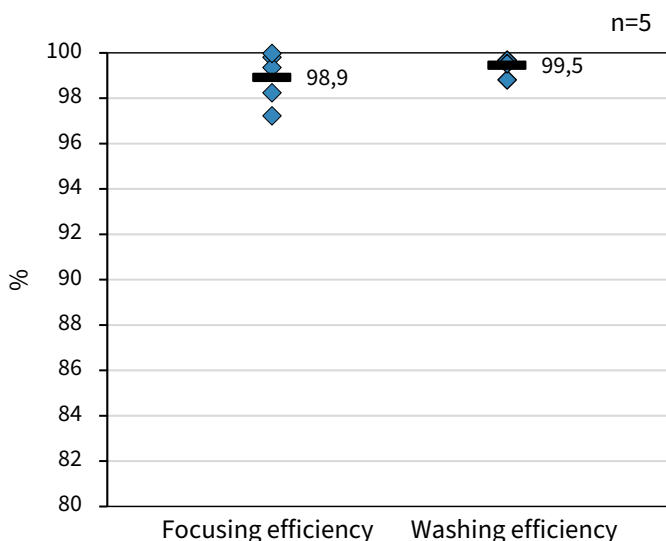
To unleash the potential of cell therapy, the next generation of manufacturing systems need to be fully enclosed and automated, ensuring product quality while controlling costs. Current solutions for separation, washing and concentration are not well suited for integration and struggle with cell recovery and viability. AcouSort offers a unique label-free high-throughput solution based on microfluidic OEM modules that ensure gentle, automated and robust cell processing.

Gentle up-concentration of T-cells

- 5-6x increase in concentration after processing
- Gentle processing with relative cell viability >97%
- Cell loss is minimized as >98% of target cells end up in target outlet (focusing efficiency)
- Sample throughput 4-6 mL/min using single chip setup
- Parallellized setup enables flow rates up to 10 mL/min



Efficient cell wash/buffer exchange with minimal cell loss



- Washing of Jurkat cells or beads at 3-6 mL/min
- Efficient washing removes >98.5% of spiked fluorescein (washing efficiency)
- >97% relative cell viability
- >97% of target cells in target outlet (focusing efficiency)

Cultured Jurkat cells were run through an AcouSort high-throughput cell processing module. Input and output samples were stained for PI and analyzed by flow cytometry (Luminex Guava EasyCyte). Focusing efficiency was calculated by the number of cells in the target outlet compared to the number of cells in both outlets combined. Washing efficiency was evaluated through the adding of fluorescein to the input sample and analyzed in a Tecan Infinite 200 Pro F Nano plate reader.

ACOUSTIC SEPARATION – THE ENABLING TECHNOLOGY

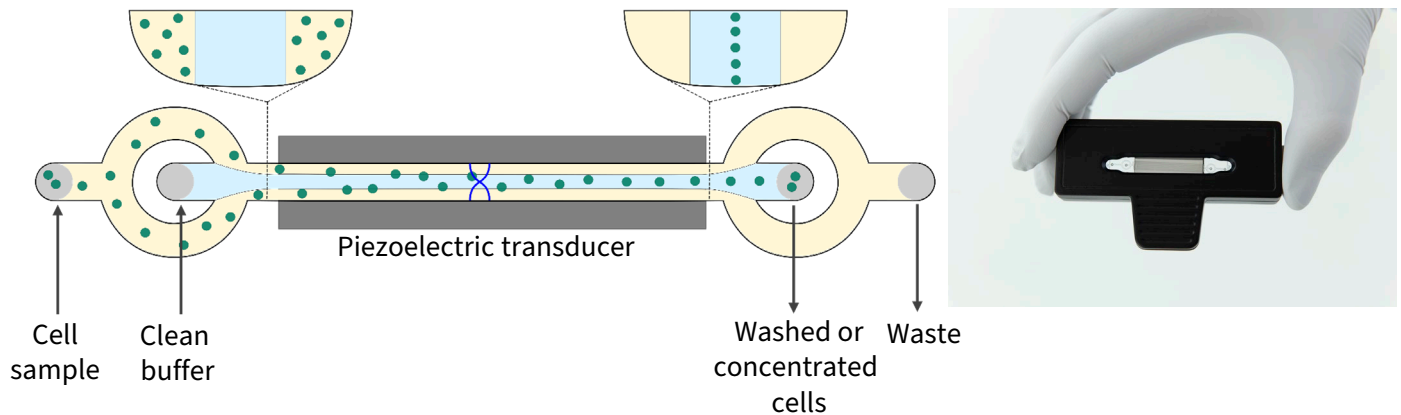


Illustration of the acoustic separation chip where the separation, wash or concentration is performed. In the chip, a piezoelectric transducer generates an acoustic standing wave in the microfluidic channel. The acoustic field moves cells into the clean buffer in the center of the channel, while small particles or contaminants remain in the side fraction.

ABOUT ACOUSORT

AcouSort is an innovative medical technology company developing critical components for instrumentation used in the diagnostics, analytics, and cell therapy processing markets. AcouSort's components allow for automated refinement of biological samples such as blood or cell preparations, providing instrumentation manufacturers with a state-of-the-art ability to integrate sample processing steps that traditionally have to be performed manually.

AcouSort's strategy is to use our innovative technology to revolutionize today's healthcare by providing a solution to automate and integrate sample processing steps, allowing for a new generation of medical devices to be developed. Through collaborations with leading Life Science companies, our integrated technology will eliminate manual handling steps while saving time, money, and ultimately – lives.

Our commercialization strategy builds on our validated OEM business model offering sample preparation modules and solutions to providers of Life Science research instrumentation, diagnostic equipment, and therapeutic systems. Through close collaborations we develop customized solutions tailored to our partner's needs. AcouSort holds an ISO13485 certificate for the design, development, and manufacturing of components for the Medical Device industry.