

FAST, GENTLE, AND FULLY AUTOMATED CELL SORTING

With the Highway1™ Cell Sorter



High-quality cell sorting is critical for advancing research in immunology, infectious disease, and cell therapy. However, conventional droplet-based cell sorters are often complex, harsh on cells, and present significant challenges when translating workflows from basic research or early development to clinical manufacturing. The Highway1™ Cell Sorter addresses these limitations with a compact, benchtop system that brings high cell-throughput, fluorescence-based sorting to every lab.

Powered by Vortex Actuated Cell Sorting (VACS™), Highway1™ utilizes gentle, low-shear microfluidics to rapidly and efficiently process large numbers of cells within a single sample while preserving maximum cell viability. Pro Cartridges—manufactured under an ISO 13485-certified quality system—ensure a seamless, cost-effective transition from early discovery to clinical manufacturing, delivering scalable performance without compromising cell health.

Why Use Highway1™?

FAST & AUTOMATED. Save hands-on time with walkaway sorting that processes up to 10,000 events per second in purity mode and 37,000 events per second in enrichment mode.

GENTLE. Preserve cell integrity with gentle, low-shear cell handling powered by VACS™ technology, ensuring high recovery of sensitive cells for downstream applications.

STERILE. Ensure sample purity with a biocompatible, sterile Pro Cartridge, ideal for aseptic processing and aerosol-free sorting.

COMPLIANT. Support your regulatory needs with Pro Cartridges manufactured under an ISO 13485-certified quality system and compliant with current Good Manufacturing Practices (cGMP).

COMPACT & ACCESSIBLE. Bring high-performance sorting directly to your benchtop with a compact footprint designed to make routine fluorescence-based sorting accessible to any lab.

How Does VACS™ Work?

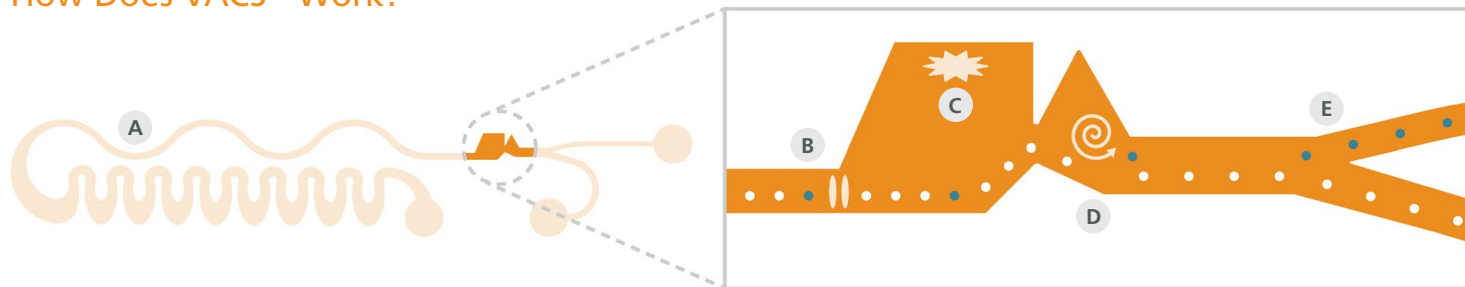


Figure 1. Vortex-Actuated Cell Sorting (VACS™) Mechanism

The sorting process begins as (A) cells are inertially focused into a single-file stream. As they pass the detection point, (B) cells are analyzed via forward scatter (FSC), side scatter (SSC), and fluorescence cytometry. When a target cell is identified, a (C) thermal vapor bubble is generated, which (D) creates a localized vortex timed precisely with the target cell's arrival. This allows the (E) target cell to be deflected into the collection channel gently and efficiently.

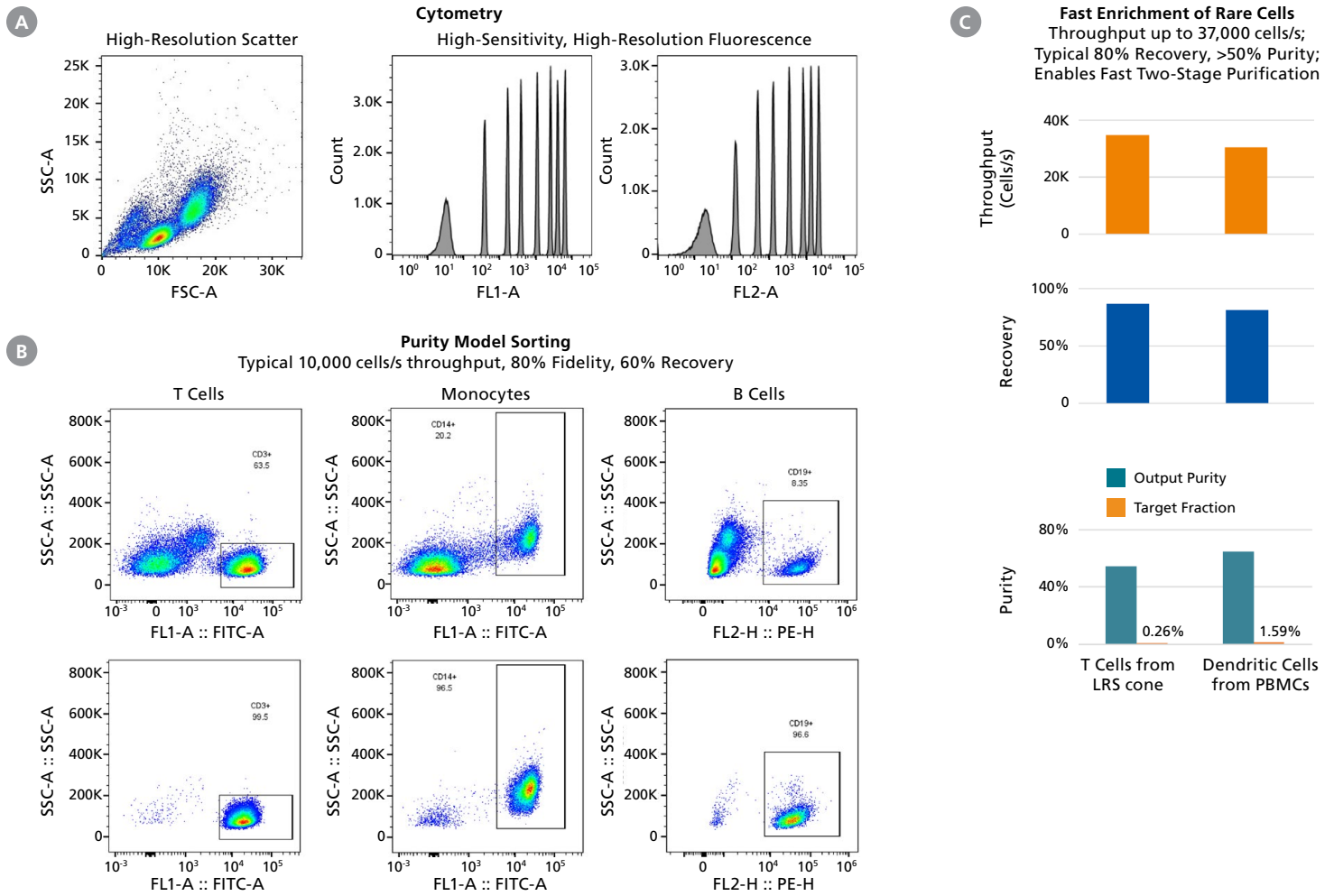


Figure 2. Highway1™ Enables High-Resolution Cytometry and High-Purity Sorting Across Diverse Cell Populations

Cryopreserved peripheral blood mononuclear cells (PBMCs) from healthy donors were thawed and underwent density centrifugation prior to staining. (A) Representative forward scatter (FSC) versus side scatter (SSC) plot demonstrating well-resolved scatter profiles, enabling clear, morphology-based population discrimination. (B) Post-sort analysis results showing high-purity populations for T cells (99.5%), monocytes (96.5%), and B cells (96.6%) using fluorescein isothiocyanate (FITC) and phycoerythrin (PE) conjugated antibodies. Sorting was conducted in Purity Mode at a typical throughput of 10,000 cells per second. (C) Performance metrics for high-throughput enrichment of rare cells. In Enrichment Mode, throughput reaches up to 37,000 cells per second, providing high recovery for rare populations like dendritic cells (Lin-HLADR+ CD11C+) from PBMCs and T cells from leukoreduction system (LRS) cones, enabling efficient two-stage purification.



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