HAPPY CELLS. BETTER SCIENCE.

Sterile, gentle microfluidics to analyze, sort and plate.

iPSC

CHO

BCells

Yeast Protoplast PBMC Nuclei

TCells

0. 0



nonocellect

Cell sorting made for every lab.

Whether you are focused on biopharma, genomics, or basic research, NanoCellect[®] delivers sterile, portable, intuitive solutions for gently sorting samples. The WOLF[®] Cell Sorter and N1 Single Cell Dispenser are designed to empower biomedical scientists and accelerate research. With WOLF's compact size and price, you can bring the convenience of FACS cell sorting to YOUR benchtop.







Applications



Single-cell Genomics

Sort individual cells into plates or tubes for higher quality sample preparation. The WOLF can improve your cell purity, viability and RNA integrity, allowing you to select and enrich the cells of interest. There's no longer a need to sequence and analyze debris, dying or off-target cells.

Cell Line Development

Giving scientists the power to find the best cell. Say goodbye to the inefficiency of limiting dilution, and the low viability of conventional cell sorters. When paired with the N1, the WOLF can select viable single cells and plate them into 96- or 384-well plates. Low pressure microfluidics greatly improves cell integrity over conventional droplet-sorters, resulting in high-outgrowth and high-titer monoclonal lines.

Gene Editing / CRISPR

High cell integrity is the new normal. With a sorting pressure of <2 psi, the WOLF induces substantially less stress on cells than conventional sorters. Simple and intuitive, the WOLF has the potential to improve workflow efficiency, and accelerate time to results.

Antibody Discovery

Improve your discovery workflow. Antigen specific B-cells can be sorted from blood and dispensed into 96- and 384-well RT-PCR plates for light and heavy chain identification. The ability to isolate high-viability, high RNA-integrity cells in your lab and on your schedule accelerates the antibody discovery workflow.



WOLF Cell Sorter

The WOLF Cell Sorter uses patented, microfluidic-based sorting with robust laser-excitation and sensitive PMT detectors to isolate mammalian cells, microbes, plant cells and more. A gentle and precise piezoelectric actuator directs cells into collection channels and allows analysis and sorting in a disposable format. This eliminates sample-to-sample contamination and biohazard exposure or cleanup.

Healthy Cells

At <2 psi, the WOLF is gentler than any conventional cell sorter, enabling healthier cells post sort, especially for engineered lines, primary cells and stems cells.

Contaminant and Biohazard Free

Disposable, aerosol-free microfluidic cartridge allows for sterile sorting that protects the sample from the environment and the scientist from the sample.

Simple & at YOUR Bench

Intuitive software, fixed optics, no fluidics cart and less than one-minute cleanup time.

Flexible

At under 2 cubic feet, NanoCellect's benchmark for access and performance allows every lab the flexibility to do analysis and sorting into tubes or 96- and 384-well plates.





Bulk Sorting

Beads:

A mixture of 5µm and 15µm Dragon Green beads (FITClike) was prepared and sorted on the WOLF Cell Sorter.

Transfected Cell Lines:

To assess the sorting performance of our instrument, mixed population of MCF-7 GFP-positive and GFP-negative cells were prepared and sorted. GFP-positive cells were sorted to a 98% purity.



N1 Single Cell Dispenser

Designed to sort and dispense into 96and 384-well plates, the N1 provides higher rates of singlet detection compared to cell printers or limiting dilution. Users can perform simple, labelfree dispensing or advanced multicolor panel single-cell dispensing.



High Viability

- The WOLF's gentle sorting technology results in improved viability of cells and higher outgrowth
- Reduced stress during a sort also avoids potential gene expression or karyotype changes experienced with traditional sorters

Sterile Microfluidics

- Disposable microfluidic cartridge
- 100% disposable fluidic pathway
- No biohazardous aerosol exposure
- No sample-to-sample contamination

Fluidic Flexibility

- The WOLF uses a small fraction of the sheath used by traditional sorters, reducing costs and allowing users to use growth media as sheath fluid
- Using growth media as sheath fluid greatly improves cell viability

Single Cell Efficiency

The 5 parameters of the WOLF and N1 provide higher rates of singlet detection, and live/dead discrimination, compared to cell printers or limiting dilution.

The WOLF Cell Sorter and N1 Single Cell Dispenser

dispensed beads with a singlet fidelity of 92.26% on 96-well plates and 93.27% on 384-well plates. Similarly, dispensing CHO cells resulted in 90.84% and 90.6% single cells into 96- or 384-well plates, respectively (*Figure 1*).

These results are comparable to traditional FACS technology, yet with significantly lower mechanical stress. High shear stress commonly reduces colony outgrowth to below 30% with FACS. However, with the WOLF low-pressure microfluidics, 86% and 87% of wells had monoclonal outgrowth after 14 days in both 96-and 384-well plates, respectively (*Figure 2*).

Figure 1. Single Cell Plating Efficiency

Percent of wells in a plate with only one control bead or one CHO-K1-GFP cell dispensed was $92.26 \pm 9.6\%$ (beads) and $90.84\% \pm 4.31\%$ (CHO cells) in 96-well plates. Similar efficiencies were achieved in 384-well plates with $93.27\% \pm 8.76\%$ (beads) and $90.6\% \pm 3.87\%$ (CHO).

Figure 2. Monoclonal Outgrowth

The number of wells with single cells were monitored and their outgrowth was reported on a per cell basis (not per plate). The percent of monoclonal outgrowth of CHO-K1-GFP was $86.04 \pm 13.77\%$ in 96-well plates and $86.77\% \pm 13.33\%$ in 384-well plates.

Microfluidic Cartridges

The WOLF Cell Sorter has several application-specific cartridges: analysis-only, bulk/tube sorting and plate sorting. Individual cartridge and tubing sets are sterile-packed to avoid cross-contamination. A key design feature is that everything that the sample and sheath fluid touches is sterile and disposable. A gentle sorting mechanism results in improved viability of cells and higher outgrowth, compared to conventional sorters.

- · No aerosols are produced during sorting
- Uses only a small fraction of sheath (~50 mL for an entire day)
- Cleanup in 1 minute: once finished for the day, simply discard the cartridge
- Versatility to sort or analyze a wide variety of cell types (1 µm to 30 µm)

WOLFViewer Software

The WOLFViewer software has an intuitive workflow menu that walks users through their experimental process, and is designed for both novice and expert users. New users can be performing their first sorts in about 20 minutes and can be on their own on day one.

WOLF Cell Sorter Specifications

Optics	
Excitation	488 nm; 30 mW diode laser (rated at 45,000 hr life)
Laser Profile	25 x 75 μm
Scatter Detection	Forward (0 Degrees, +/-15) Back (180 Degrees, +/-15)
Emission Detection	 3 Colors, user exchangeable bandpass filters Standard set installed: 525 ± 25 nm (FITC, GFP) 585 ± 20 nm (PE) 665 Longpass (PI, PE-CY5, mCherry, tdTomato)
Optical Alignment	Fixed alignment, no maintenance required
Fluidics	
Sample Input	1.5 and 5.0 mL tubes
Sheath Input	50 mL Conical Tubes
Sheath Fluid	PBS or Buffer of Choice
Sheath Fluid Usage	7.5 mL/Hour
Sample Flow Rate	24 µl/Minute
Sheath Flow Rate	160 µL/Minute
Dead Volume	50 µL
Minimum Sample Volume	150 μL
Tubing Diameter (Inner)	200 to 500 µm
Flow Cell	200 x 70 µm
Smaller Channel Diameter	50 µm
Sample Pressure	< 2 psi

Performance	
Scatter Resolution	Resolves lymphocytes, monocytes & granulocytes
Fluorescence Resolution	8 peak separation with the Spherotech Rainbow calibration beads in the 3 fluorescence channels
Analysis Speed	>5,000 events/second
Sorting	1 and 2 way
Back-to-back Sorting Speed	300 events per second
Absolute Counts	Yes
Volumetric Analysis	Yes
Warm-up Time	Less than 1 minute
Sorting Output	1.5 mL and 5.0 mL, 96- and 384-well plates
Sorting Purity	Up to 99% purity

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