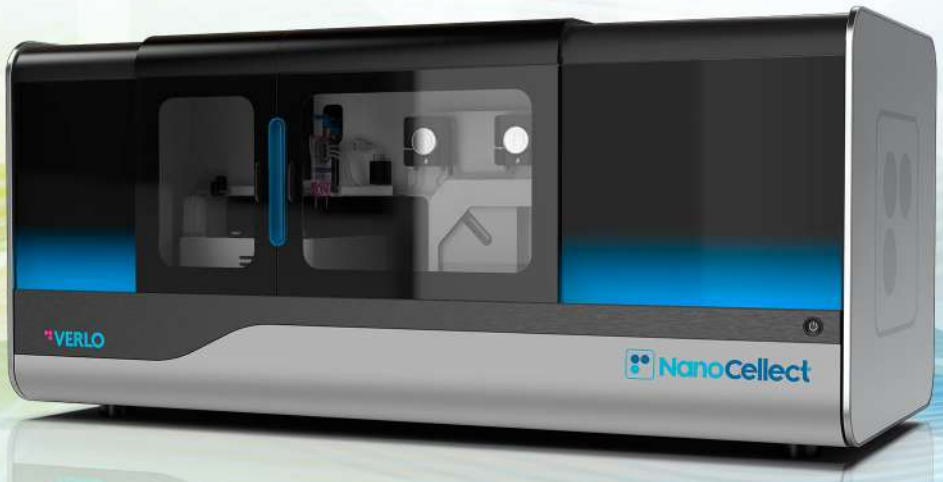
NanoCellect

VERLO

Image-Guided Cell Sorter

See, Analyze, Sort ...Discover

With the Microfluidics You Love



Push boundaries

The VERLO™ Image-Guided Cell Sorter expands upon NanoCellect's gentle microfluidic-based cell sorting technology to enable researchers to visualize, analyze and sort cells based off image features and cell morphology. With two lasers and nine colors, plus 3 label-free parameters and a total of 12 imaging channels.

Experience cell sorting with the most image-based parameters

Enable cutting-edge workflows for cell analysis and cell sorting

The VERLO combines traditional flow cytometry with image-based technology.

VERLO allows more flexibility

With two imaging lasers, nine fluorescent and three label-free channels, the VERLO allows more flexibility for assay design.

Compatible machine learning tools

Enhanced novel label-free and fluorescent gating strategy with 3rd party machine learning tools to identify new cell populations.

Sterile cell sorting

Microfluidic cartridge provides complete interchangeable fluidics system to prevent cross-contamination and eliminate aerosols - keeping you and your samples safe.

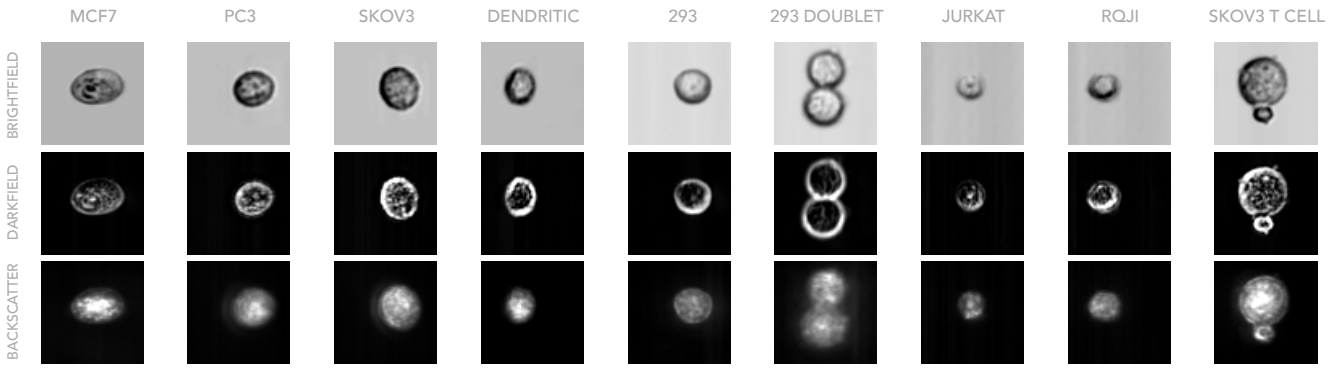
Enhanced cell viability post sort with flexible media capabilities

NanoCellect's microfluidic cartridge utilizes gentle sorting mechanism and low pressure (<2 psi) to keep cells happy and healthy. Disposable nature of cartridge enables greater flexibility in media choice.

Best-In-Class Clonal Outgrowth

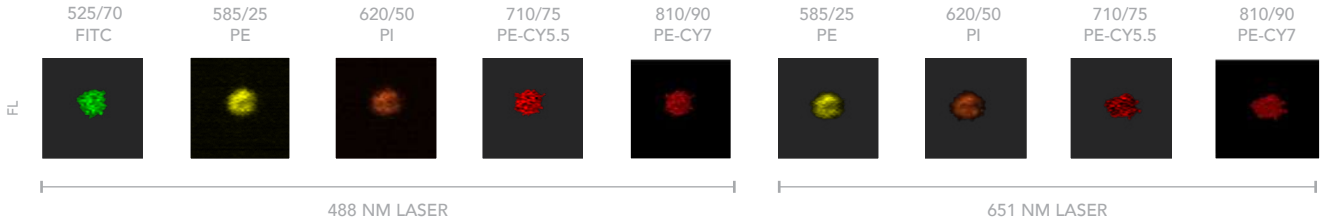
The VERLO integrated 96- and 384-well dispensing and its gentle microfluidics yield higher number of clones per plate.

VERLO is the first 2-laser Image-Guided Cell Sorter with 3 label-free and up to 9 fluorescent channels



ALL LABEL-FREE CHANNELS FROM THE 488 NM LASER

CD45-Labeled immune cells

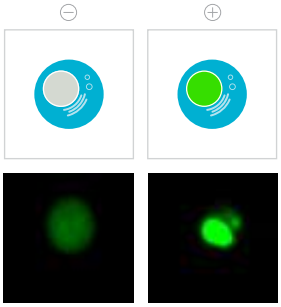


Explore Cell Morphology

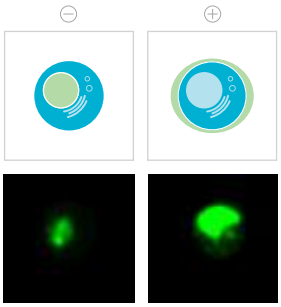
The VERLO exhibits label-free and fluorescent image features that you can sort on.

FLUORESCENCE

Average, Integrated, Max Intensity

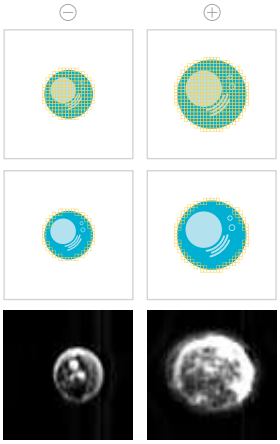


Radial Moment



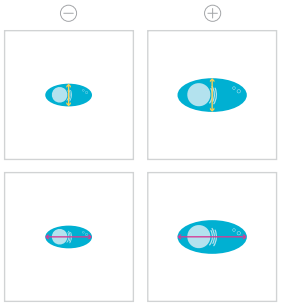
CELL SIZE

Area and Perimeter

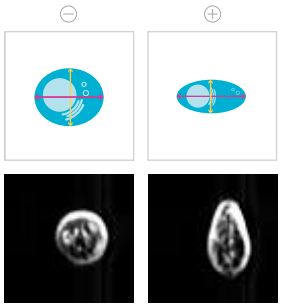


CELL SHAPE

Minor Axis & Major Axis

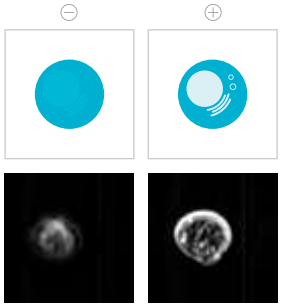


Eccentricity

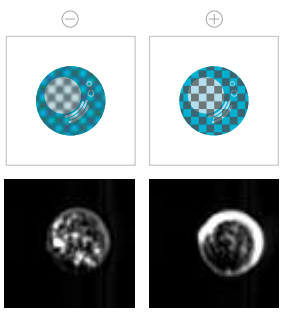


TEXTURE

Contrast

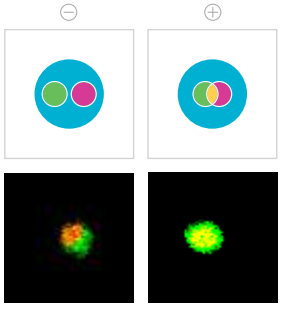


Gradient RMS

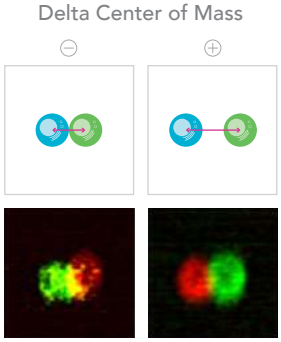


CROSS-CHANNEL

Correlation



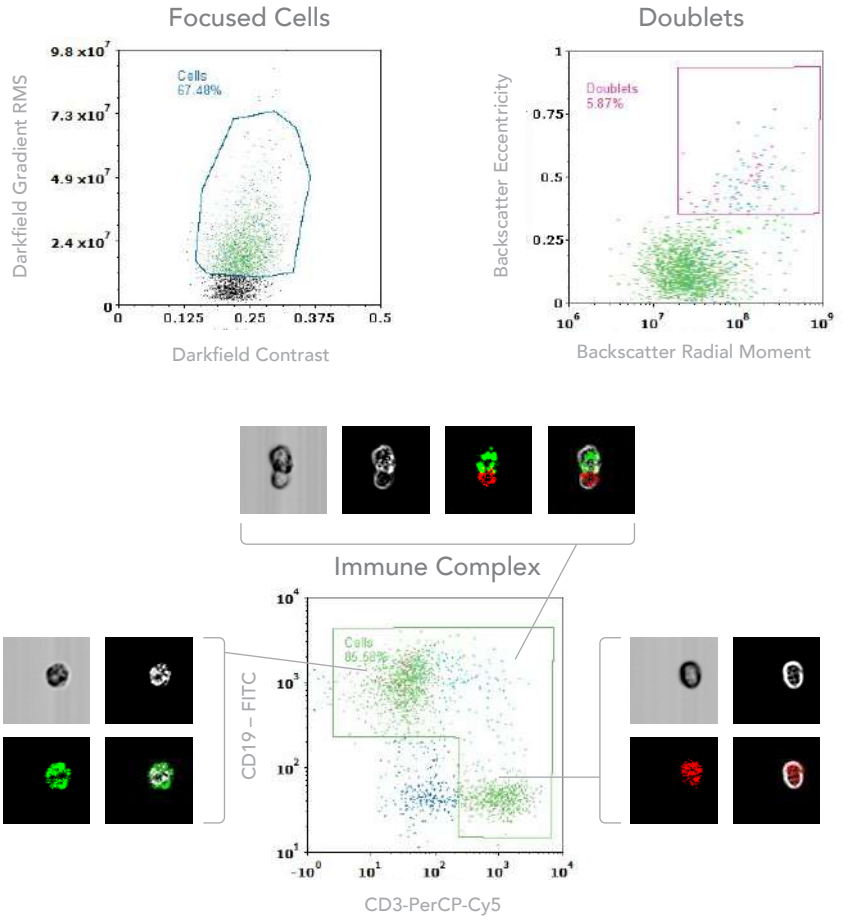
Delta Center of Mass



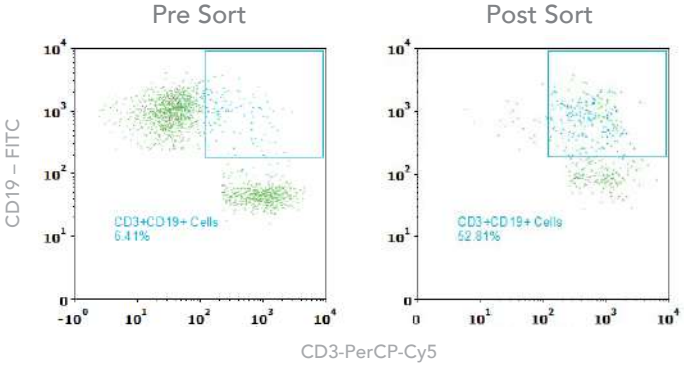
Cell-Cell Interactions

Detect and preserve cellular associations throughout an entire sort.

Gating Strategy



Sorting Results

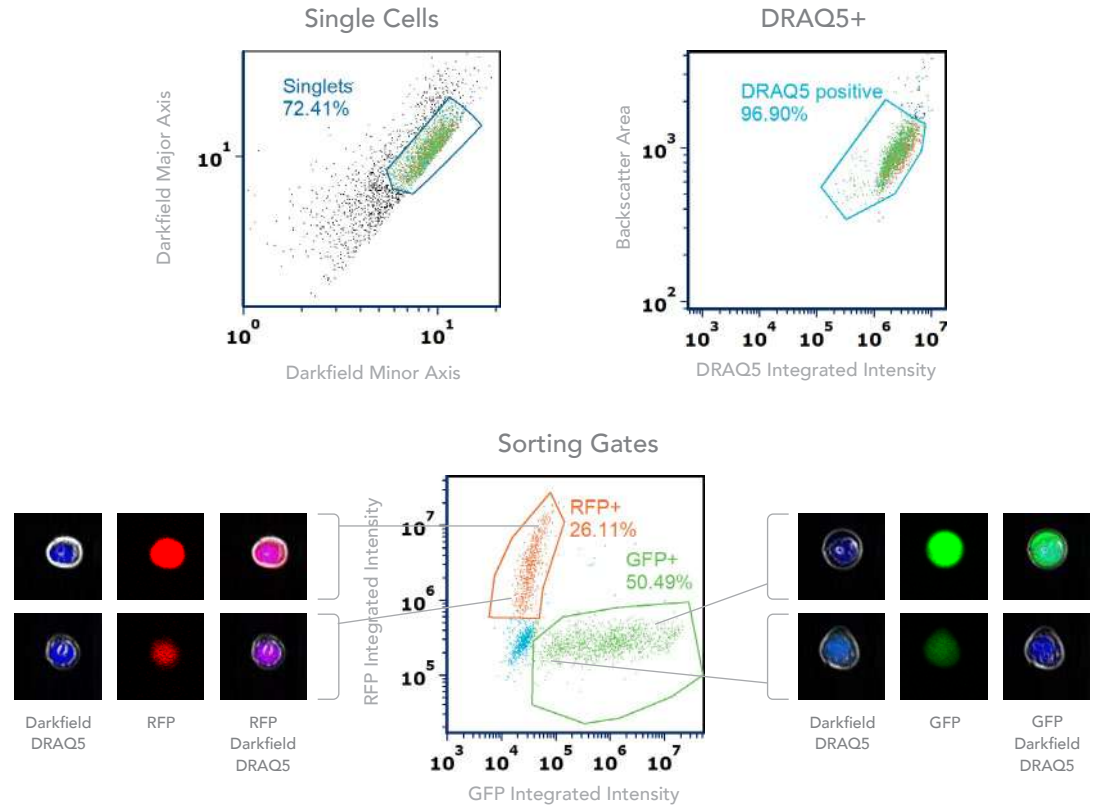


- Get Focused Cells
- Use morphology to identify doublets
- Confirm immune complexes using CD markers
- Sort live active immune complexes

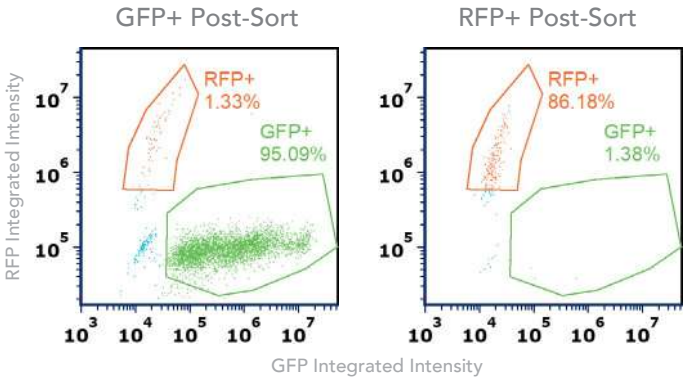
Sort based on fluorescence protein expression

With a 488nm and a 561nm laser, the VERLO can sort live cells expression multiple fluorescent proteins

Gating Strategy



Sorting Results

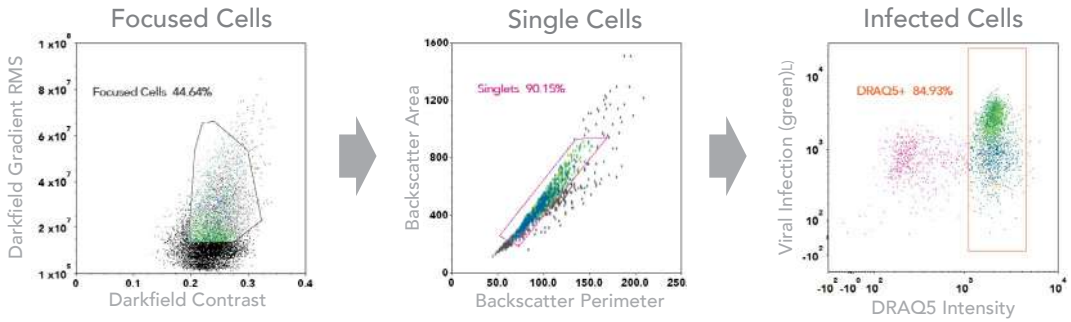


- Use morphology to identify single cells
- Visualize both GFP+ and RFP+ cells in your sorting gates
- 2-way sorting of GFP+ and RFP+ cells

Intracellular localization

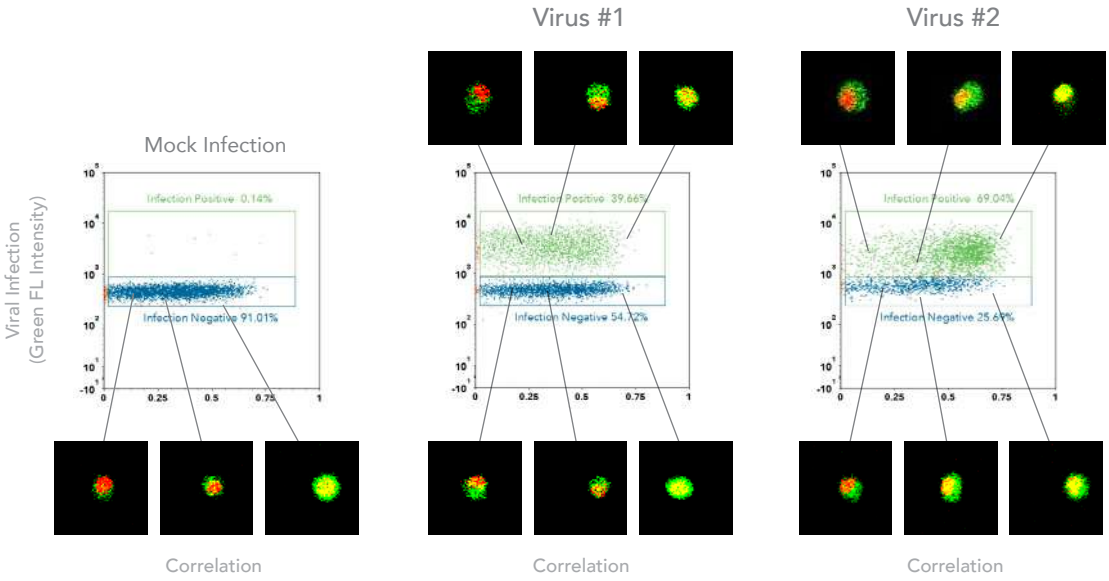
Visualize and sort based on intracellular protein dynamics.

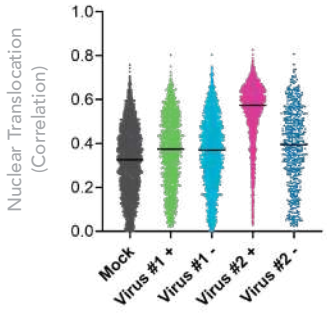
Gating Strategy



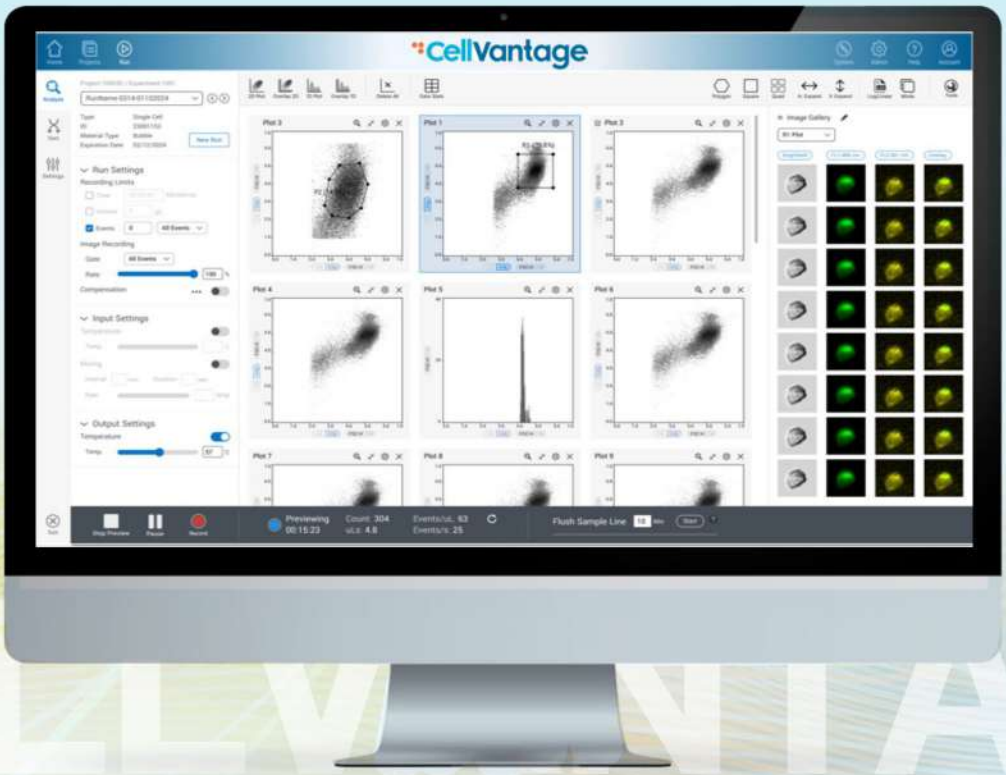
- Get Focused Cells
- Confirm Single Cells
- Identify Infected Live Cells
- Measure NuclearFactor Translocation

Transcription Factor Nuclear Translocation





- Nuclear translocation is measured by correlation between DRAQ5 and transcription factor signal
- Virus #2 induces statistically significant nuclear translocation



CellVantage

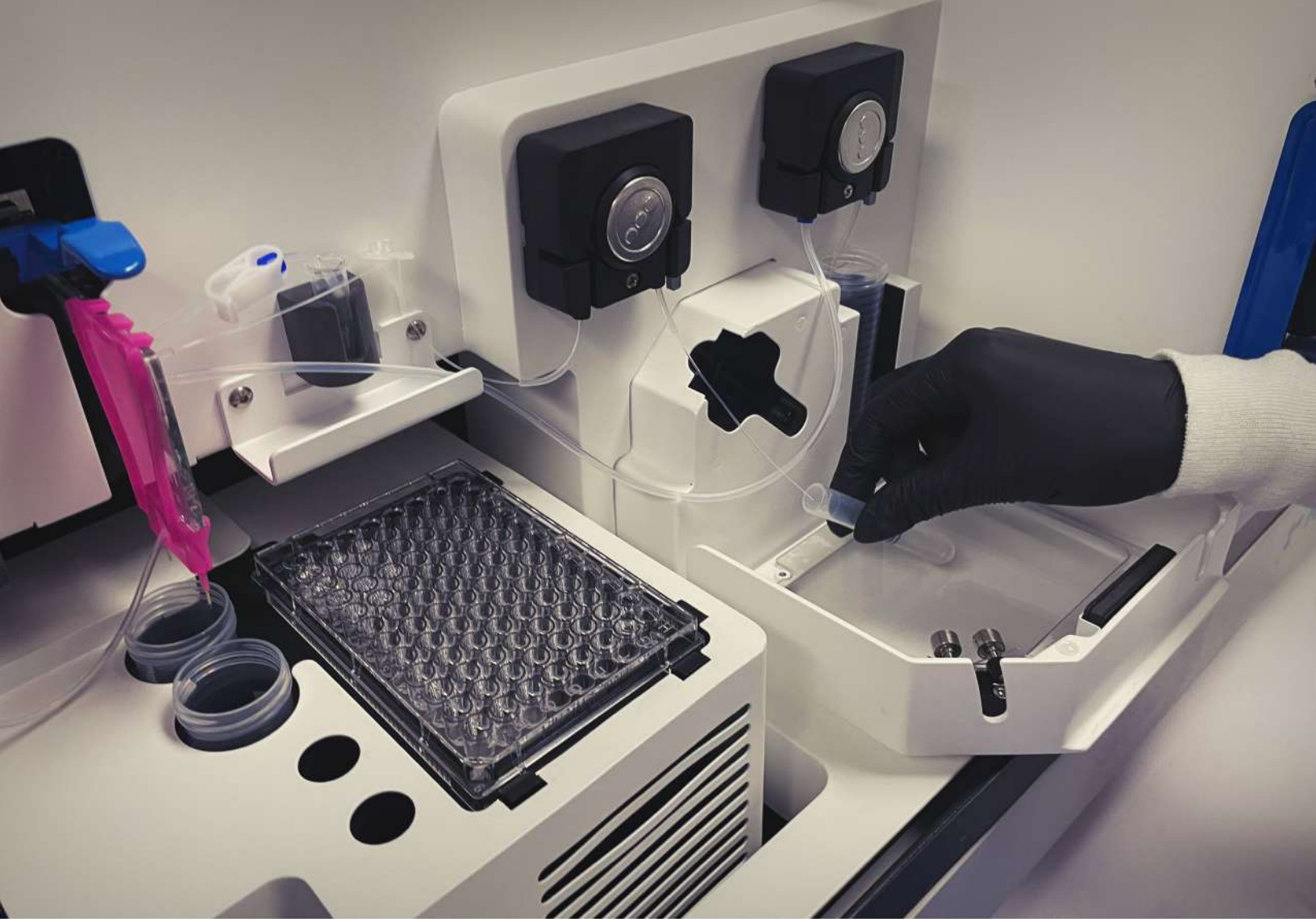
CellVantage software combines classic flow cytometry features with an interactive image gallery to visualize all analyzed and sorted cells

- Intuitive workflows for instrument set-up and analysis.
- Customizable image gallery for cell population visualization.
- Index sorting.
- FCS 3.0 or ICE file exports.
- Automatic and manual compensation.

Gentle Microfluidic Technology

The VERLO™ Image-Guided Cell Sorter uses patented, microfluidic-based sorting 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.

- Disposable cartridges that allow for bulk sorting or single-cell sorting.
- Sort up to 200 cells per second with high accuracy and effective recovery.
- Sort two selected cell populations with bulk sorting and no waste of unsorted cells.
- Deposit 1 to 100 cells per well in a 96- or 384 well.



Integrated single-cell dispensing and temperature control

Designed to sort and dispense into 96- and 384-well plates, the integrated dispenser provides higher rates of singlet detection compared to cell printers or limiting dilution.

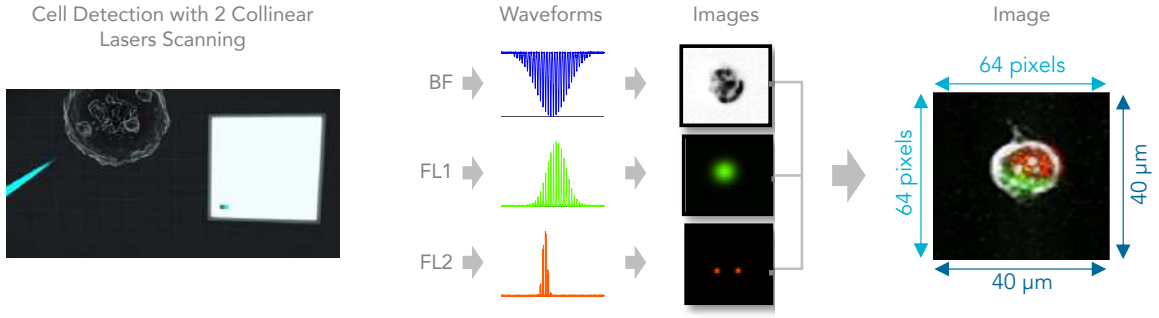
- Bulk sorting in 5 mL and 50 mL plates
- 96-well plating: 9 min
- 384-well plating: 20 min
- Dispensed Volume in plates: 4 µL
- Plate options: 96-or 384-well plates (flat / U-bottom / V-bottom or PCR)

The VERLO has integrated independent sample cooling and optional sample agitation to maintain them in uniform suspension.

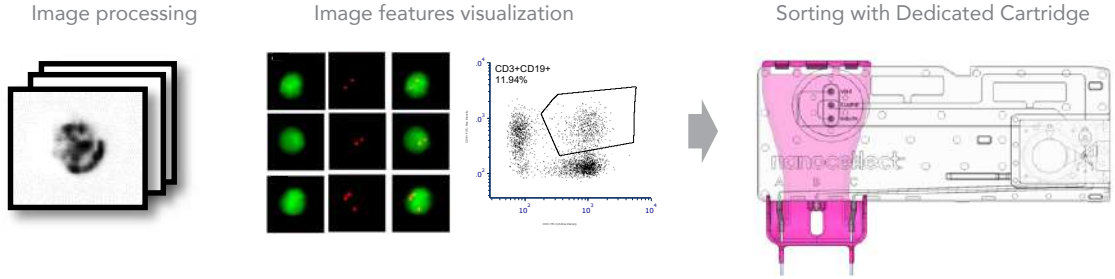
- Chilling Temperature: 4-37°C (39.2-98.6°F)
- Sample Rotation Speed: 0-100 RPM

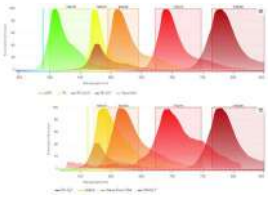
Image Acquisition

Waveform signals from all channels are used to reconstruct label-free and fluorescent images prior to analysis and features measurements



Real-time Analysis and Sorting Decision





VERLO Spectral Configuration

The VERLO has 2 collinear lasers modulated in time enabling the use of up to 9 different fluorescent channels from 5 PMTs.

Check out the VERLO Spectral Viewer

Fluorophore Chart

Excitation Laser	Emission Filter	Dyes	Fluorescent Protein
488 nm 40 mW DPSS Laser	525/50	Alexa Fluor® 488, FITC, Brilliant Blue™ 515	eGFP, eYFP, mCitrine
	585/25	PE	mKate, mBeRFP
	620/50	PI, Texas Red®, PE-Texas Red®, PE-Alexa Fluor® 594, ECD	dsRed
	710/75	PerCP, PE-Cy5.5®, PE-Cy5®, PerCP-Cy5®	
	810/90	PE-Cy7®, PE-Vio®770	
561 nm 40 mW DPSS Laser	585/25	PE	DsRed, tdTomato
	620/50	Texas Red®, PE-Texas Red®, Alexa Fluor® 594, PE-Alexa Fluor® 594, ECD	mCherry, mStrawberry
	710/75	PE-Cy5.5®, PerCP, 7-AAD, DRAQ5	
	810/90	PE-Cy7®, DRAQ5™, DRAQ7™	

VERLO Technical Specifications

Fluidics

Sample input	1.5 mL, 2 mL or 5 mL tubes
Sheath input	50 mL conical tubes
Sheath fluid	Culture media or buffer of choice
Sheath fluid usage	8.4 mL/hour
Sample flow rate	14 µL/minute
Sheath flow rate	140 µL/minute
Sample line volume	50 µL
Minimum sample volume	100 µL
Tubing diameter (inner)	200 to 500 µm
Smaller channel diameter	70 µm
Sample pressure	< 2 psi
Sample output (bulk sorting)	1.5 mL, 5 mL or 50 mL tubes
Sample output (plate sorting)	96-or 384-well plates Flat, U- & V-bottom or PCR plates

Optics

Laser Profile	1.5 x 1.5 µm (1/e2 Diameter)
Scatter detection	Forward (0 degrees, +/- 15) Back (180 degrees, +/- 15)
Excitation & emission detection	488 nm 40 mW, Brightfield, Darkfield, Backscatter, Bandpass: 525/50, 585/25, 620/50, 710/75, 810/90, 561 nm 40 mW, 585/25, 620/50, 710/75, 810/90
Optical alignment	Fixed alignment
Pixel Size	0.63 pixel/µm
Field of View (FOV)	40 (Horizontal) x 40 (Vertical) µm

Performance

Scatter sensitivity	<1.5 µm by FSC or BSC
Fluorescence sensitivity	<200 MESF FITC (488 nm laser) <250 MESF PE (561 nm laser)
Fluorescence resolution	9-peak separation with SPHERO™ Rainbow Calibration Particles
Analysis speed	Up to 1,000 events/second
Sorting	1-and 2-ways
Back-to-back sorting speed	Up to 200 events/second
Absolute counts	Yes
Volumetric counts	Yes
Warm-up time	Less than 1 minute
Sorting purity	Up to 99% purity
Working Cell Concentration	100,000 – 500,000 cells/mL
Plating volume 96-well plate	PCR mode: 3.4 µL/well Fidelity mode: 5.0 µL/well
Plating volume 384-well plate	PCR mode: 3.4 µL/well Fidelity mode: 5.0 µL/well

Environmental & Sample Control

Input Sample/Sheath Temperature control	4-37°C (39.2-98.6°F)
Input Sample Agitation	Intermittent rotation speed 0-100 RPM
Output Sample Temperature Range	4-37°C (39.2-98.6°F)

Specifications

Dimensions	18 H x 40 W x 18.5 D inch 45.7 H x 101.6 W x 47 D cm
Weight	150 lbs. or 68 kg
Electrical	AC Input: 100-240V, 50-60Hz, 2A

NanoCellect Technical Support

NanoCellect is committed to provide you with the highest level of support and expertise for your cell sorting applications. We are dedicated to delivering the very best solution and assistance to help improve the quality of your research.

Onboarding

Our skilled field service engineers come onsite to unpack and install your new equipment into its desired location. Once installed, our engineers perform a series of quality control assessments to ensure the instrument is functioning properly.

Training

Our knowledgeable field application scientists come onsite to provide hands-on training on how to set-up, operate, analyze, and sort using your new instrument. After onboarding, our support team is available for remote strategy sessions to help refine your data. Additional online training videos and other materials are always available on our dedicated user knowledge base found on our website.

Technical Support

Whether you have a simple question or need some assistance, our technical support team is ready to provide answers and solutions. Tech support can be reached by either phone, email, or chat-bot – so whether you like typing or talking – we are here to help! Additionally, we can use remote TeamViewer session to provide real-time support when you need us!

Service Contracts

Our service offerings include multiple options that satisfy the level of service that best fit your budget and laboratory needs. All service plans provide standard customer support, one-on-one TeamViewer sessions, software updates for greater analysis capability, and costs associated with any instrument repair. Additionally, select plans provide annual preventive instrument maintenance and additional benefits.

For more information, visit nanocellect.com

Or email info@nanocellect.com

NanoCellect

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