

# capabilities today. flexibility for tomorrow.

NEW CellStream™ benchtop flow cytometry system  
with Amnis® detection technology inside



The life science business of Merck KGaA,  
Darmstadt, Germany operates as  
MilliporeSigma in the U.S. and Canada.

Capabilities Today. Flexibility for Tomorrow.



Unparalleled combination of

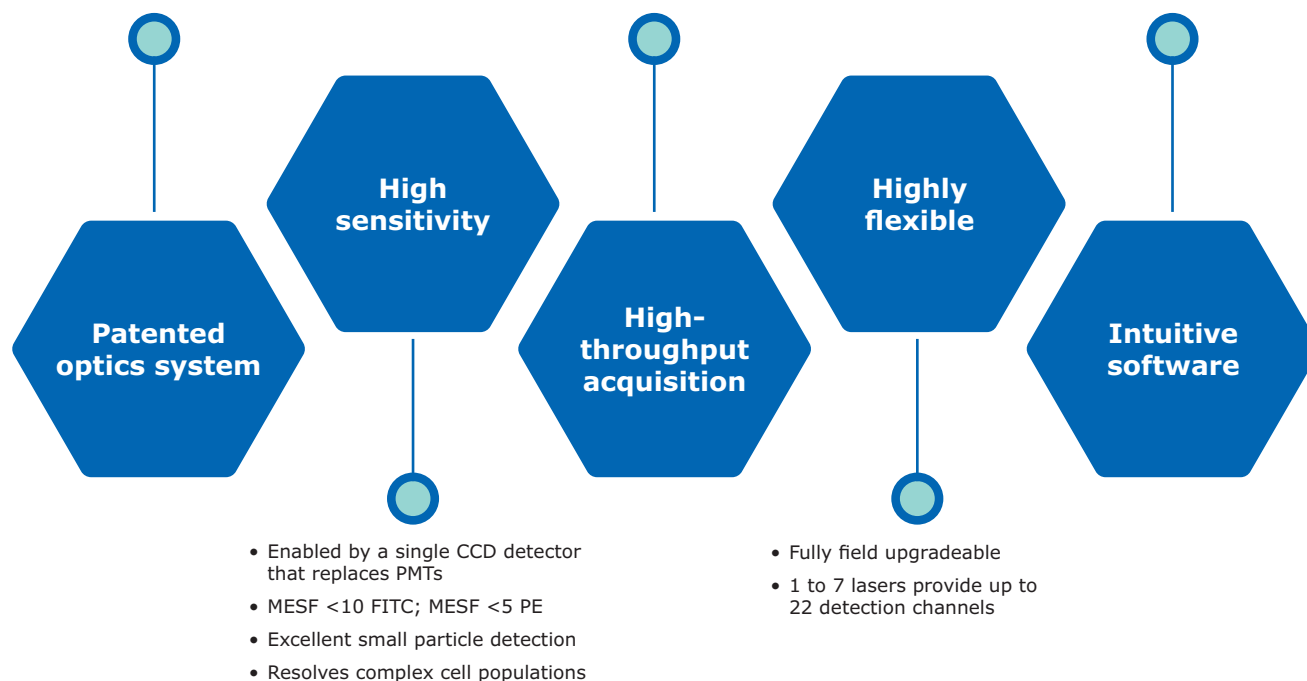
## FLEXIBILITY & PERFORMANCE

The CellStream™ flow cytometer is a new benchtop system that offers unparalleled capability, sensitivity, and expandability at an accessible price.

Contains patent-protected camera technology unique to our state-of-the-art Amnis® flow cytometers

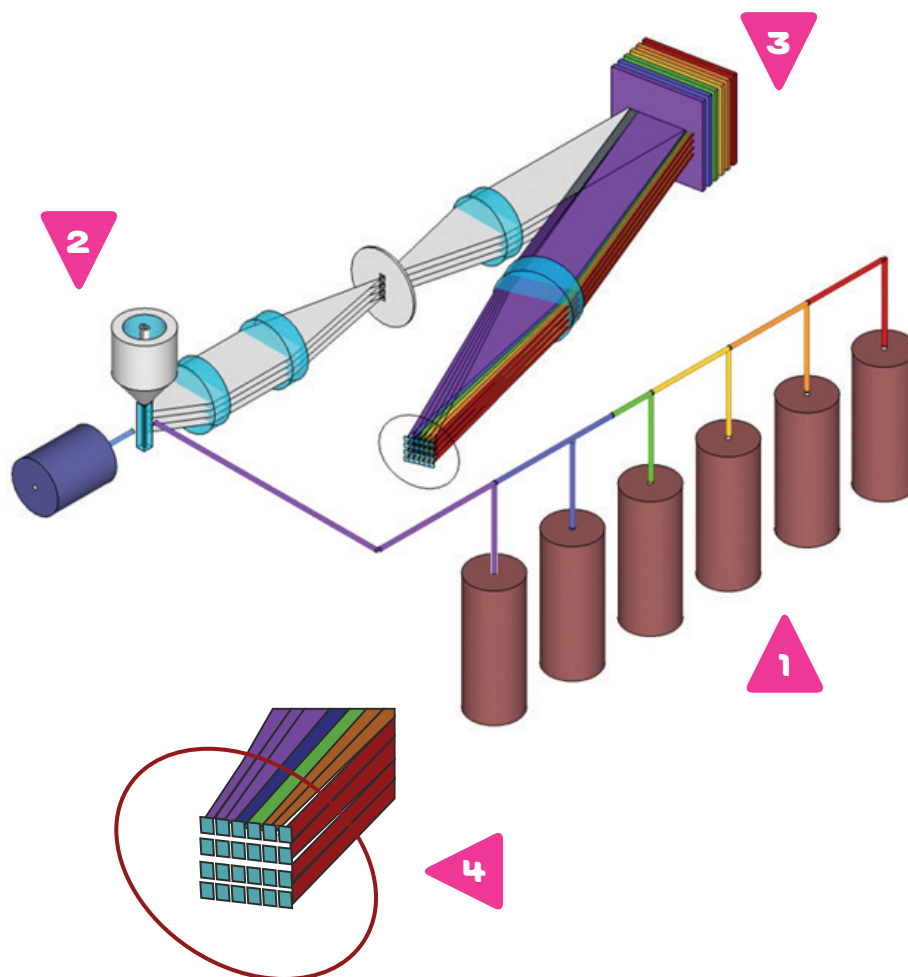
Single tube and 96-well plate sampling

- 21 CFR Part 11-enabling features
- Automated daily system calibration
- Unique Event Gallery for visual sample verification



# Inside the CellStream™ System

Our patented time delay integration (TDI) and camera technology delivers *sensitivity* and *expandability* beyond what is possible with traditional flow cytometers.



## CellStream™ system architecture

1. Up to 7 lasers are focused in discrete locations.
2. Hydrodynamically focused cells pass through the laser-illuminated region. Fluorochromes bound to the cells are excited and emit into the collection system. Fluorescence is collected and directed toward an intermediate image plane.
3. The filter stack decomposes each of the four discrete vertical positions in the intermediate image plane into 22 separate channels of data.
4. All 22 channels fit efficiently onto a CCD (charge-coupled device) array.

CellStream™ system's sensor contains multiple discrete collection fields using the same CCD as patented Amnis® technology.

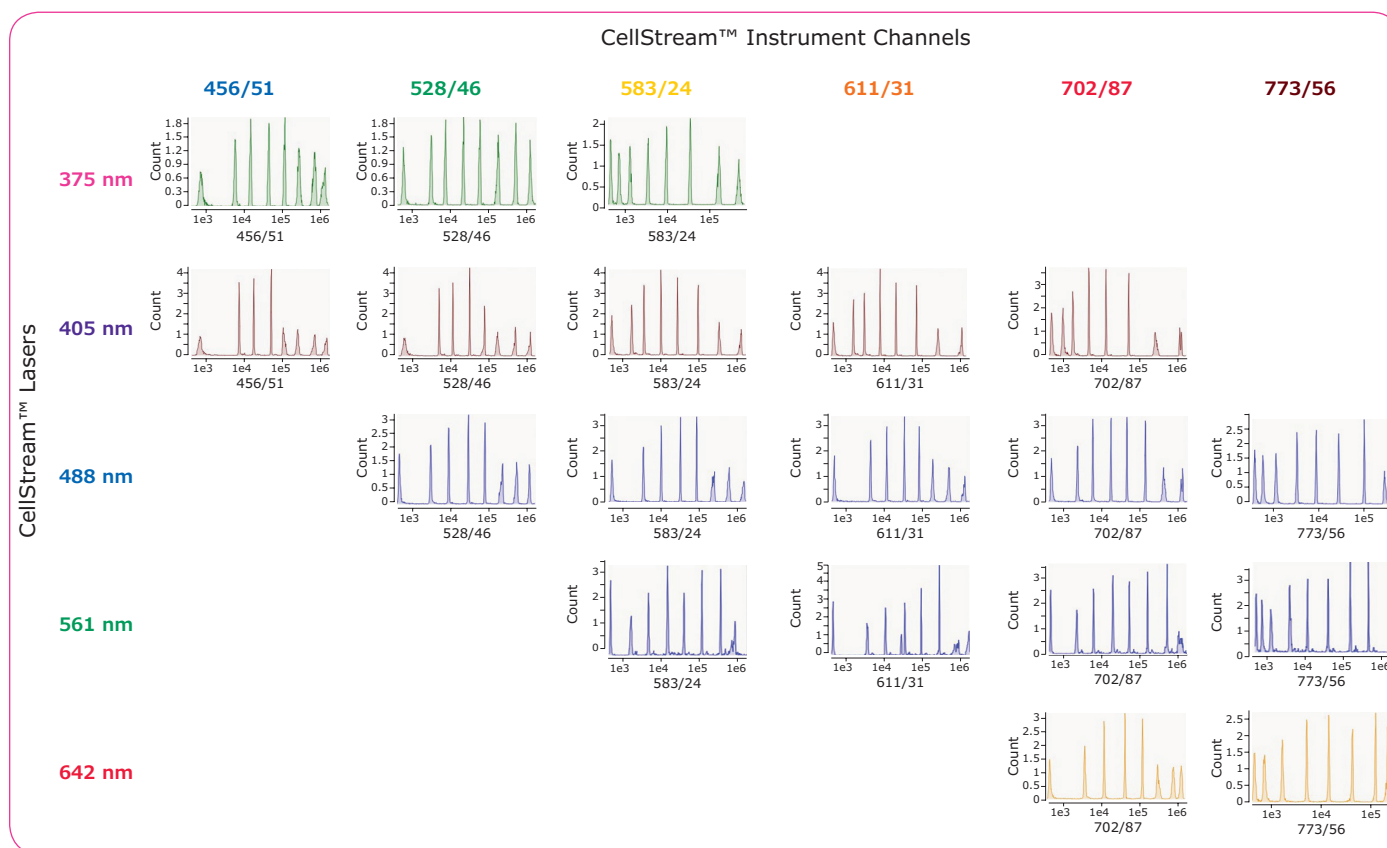
# STREAM THE POWER OF SENSITIVITY

## High sensitivity fluorescence detection

Fluorescence sensitivity of the CellStream™ flow cytometry platform was evaluated using industry standard 8-peak Spherotech rainbow calibration beads.

The data demonstrate high fluorescence sensitivity of the CellStream™ system:

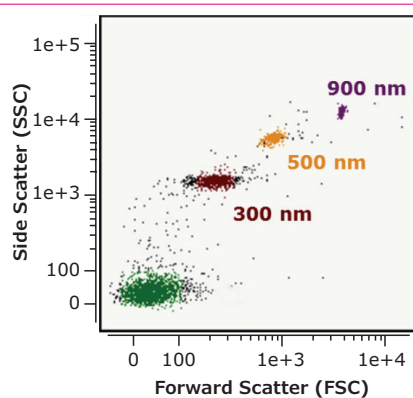
- All 8 peaks are clearly resolved on every detection channel
- Low MESF (Molecules of Equivalent Soluble Fluorochrome) values determined:
  - MESF <10 FITC; MESF <5 PE



## High sensitivity submicron particle detection

The CellStream™ flow cytometer clearly detects and discriminates particles as small as 0.3  $\mu\text{m}$ .

The figure shows the acquisition of Megamix-Plus FSC size beads containing 300, 500, and 900 nm fluorescent beads in a known ratio of 4:2:1. Instrument settings: 70 mW SSC, 10% FSC, and 200 mW 488 nm; slow speed.

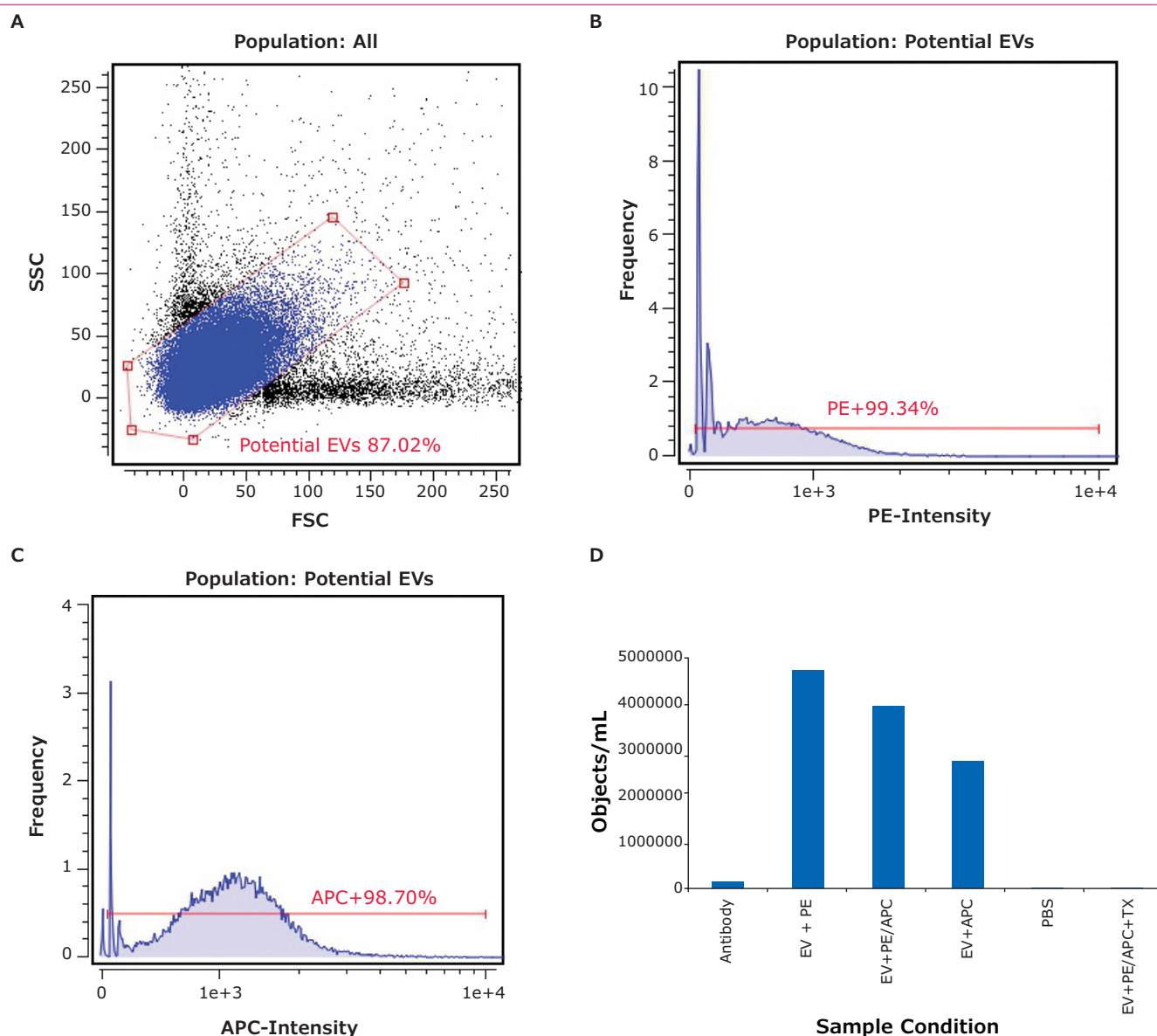




# STREAM SUPERIOR DETECTION OF SMALL PARTICLES

Only recently has the importance of extracellular vesicles (EVs) as key mediators of intercellular communication been appreciated. EVs are membrane-derived structures that include exosomes, microvesicles and apoptotic bodies.

In this study, RBC-derived EVs were stained with anti-CD235ab-PE and/or anti-CD235ab-APC. Control samples were collected for antibody only, PBS, and RBC EVs labeled with anti-CD235ab-PE and anti-CD235ab-APC incubated with Triton-X 100 (TX). **(A)** Initial gate to identify potential EVs. Using this gate, **(B)** PE+ and **(C)** APC+ events were identified. **(D)** Chart showing PE+ and APC+ objects/mL for the control samples and the CD235ab-PE and anti-CD235ab-APC labeled samples.

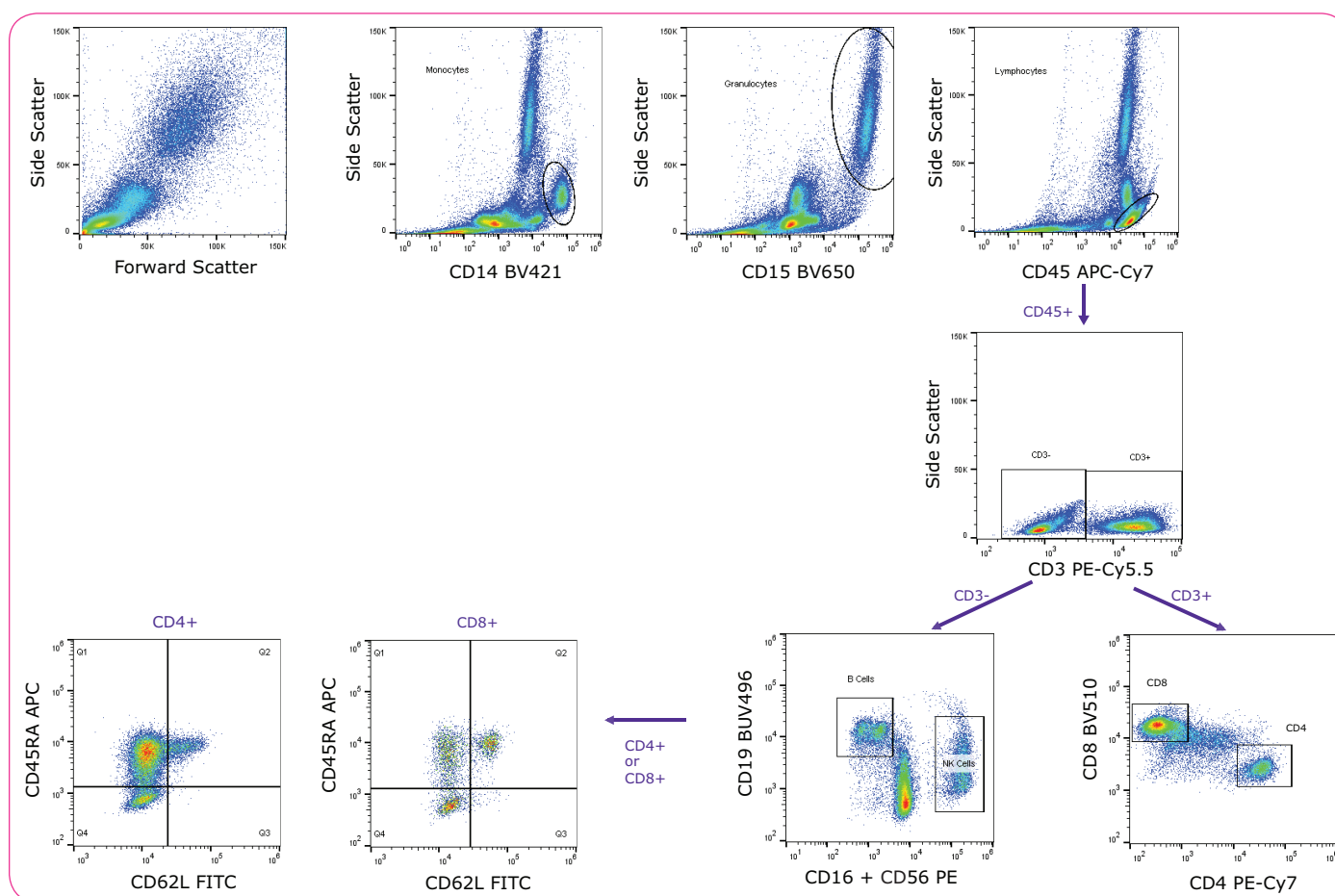


# STREAM THE POWER OF VERSATILITY

CellStream™ flow cytometer enables cell researchers to obtain reproducible, multi-parametric single cell data for a wide variety of applications.

## Immunological Phenotyping 10-Color Assay

In this example, a 4-laser CellStream™ system accurately resolves 10 different fluorochromes within a single assay. Below, different immune cell populations were clearly resolved from one another within a sample of PBMCs.



### Staining protocol

50  $\mu$ L sample\* of PBMCs were stained for 20 minutes with the following 10 fluorochromes (5  $\mu$ L each):

- CD19 BUV 496 (B Cells)
- CD14 BV 421 (Monocytes)
- CD8 BV 510 (CD8 T Cells)
- CD15 BV 650 (Granulocytes)
- CD62L FITC (Naïve and Memory T cells)
- CD16 + CD56 PE (NK cells)
- CD3 PE-Cy5.5 (T Cells)
- CD4 PE-Cy7 (CD4 T Cells)
- CD45RA APC (Naïve and Memory T cells)
- CD45 APC-Cy7 (Lymphocytes)

After staining, samples were washed once, resuspended in Guava® Antibody Dilution Buffer, and acquired on the CellStream™ system. A total of 10,000 lymphocyte events were acquired.

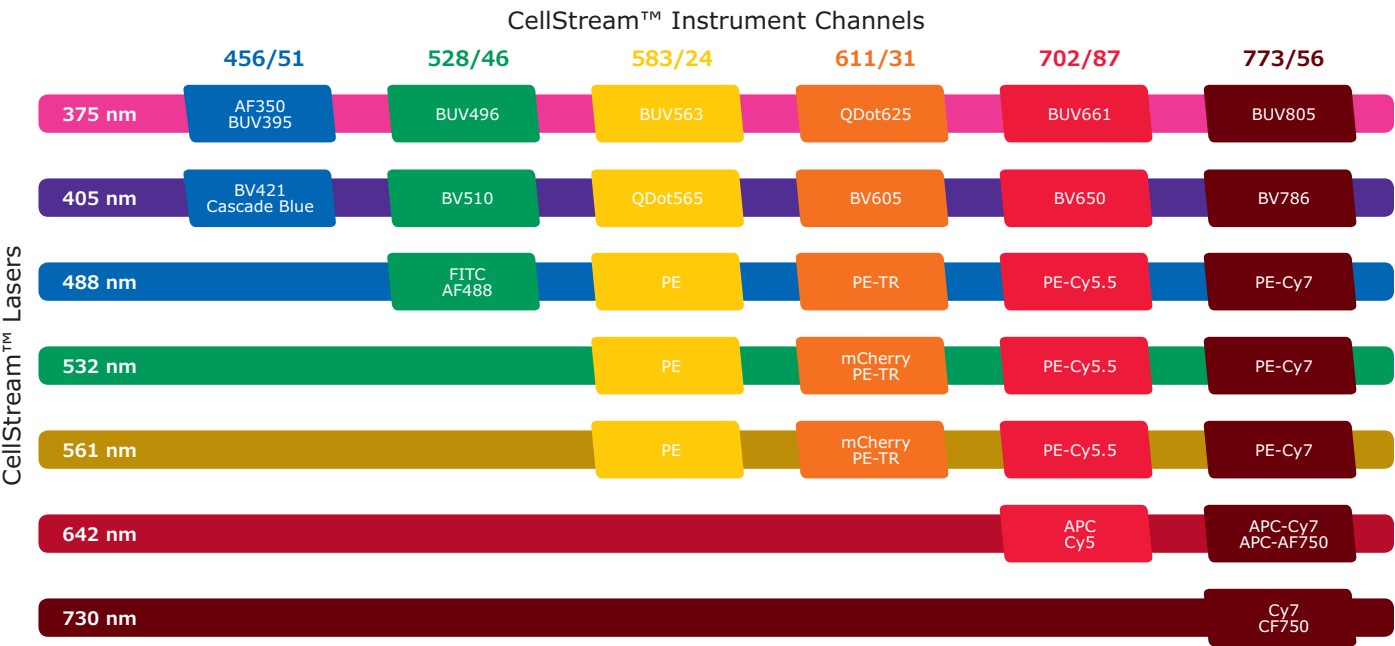
\*Approx. 0.6-1.65 million white blood cells, depending on donor.

# A Fully Configurable System

CellStream™ systems are made to order. Build an instrument specific for your needs from the available lasers below. All systems come standard with:

- AutoSampler for 96-well plates
- Single tube sampler
- 488 nm laser

## Excitation & Emission Capabilities of the 7-Laser CellStream™ Flow Cytometer



## Inside the 7-Laser CellStream™ System



# STREAM THE CONFIDENCE OF INTUITIVE SOFTWARE

Integrated software provides an intuitive and easy-to-use interface, enabling you to focus on your experiments and your data. Software includes 21 CFR Part 11-enabling features for quality control and data integrity, essential in regulated environments.

## Load & Record

- Tubes or plates
- Simple & customizable AutoSampler set up

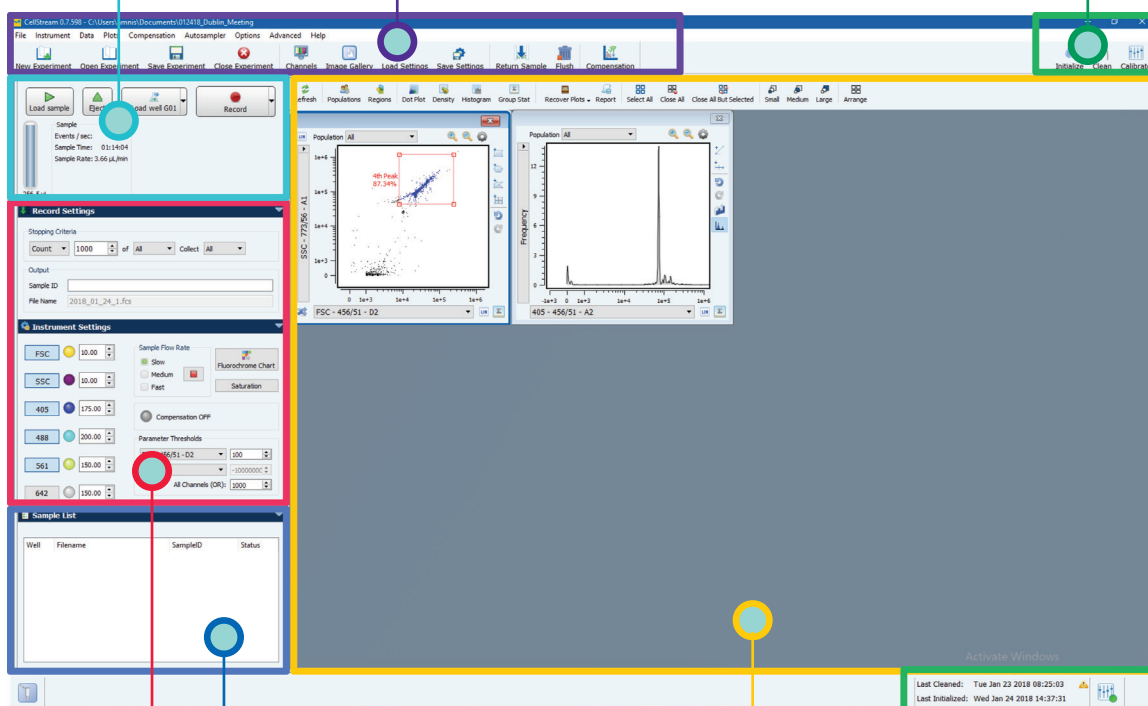
## Toolbar

- Quickly define experiments, view Event Gallery or access other frequently-used parameters

## Startup/Shutdown/System Status

One click:

- Initialization & daily cleaning with on-board fluids
- Calibration & testing (laser alignment, dark current, flow core position, flow core stability, channel alignment, laser power)



## Sample Listing

## Settings

- Record by count, volume or time
- Intuitive control of instrument, experiment and plotting parameters, and thresholds
- Pop-up fluorochrome chart for easy channel identification

## Display & Analysis

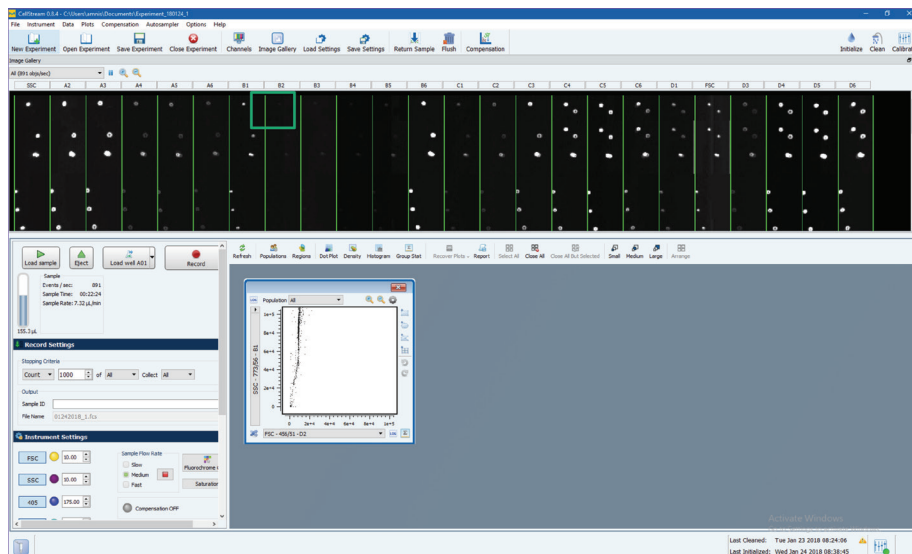
- Full suite of data display and analysis tools (histograms, dot plots, density plots, overlays, dot plot backgating, multi-file analysis, ...)
- Streamlined acquisition of compensation files
- Export statistics or create customized PDF reports



A unique Event Gallery feature of CellStream™ Acquisition Software allows for population verification, aids in troubleshooting and resolves doublets.

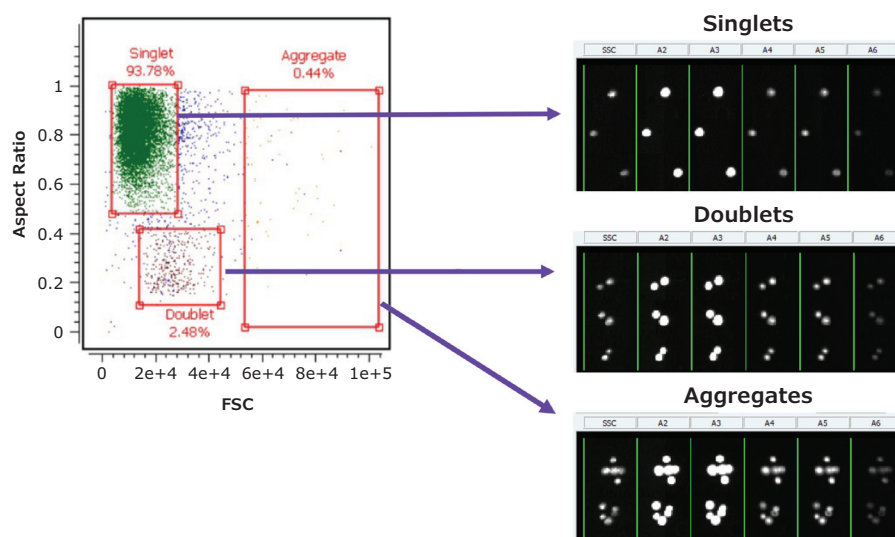
### Real-time Event Gallery

- Low resolution images of your cells in flow
- Provides verification of suspected populations
- Aids in troubleshooting
- Unlike any other non-imaging flow cytometer



### Doublet Discrimination

- Aspect ratio feature allows for visual confirmation
- Clear resolution between singlet, doublet and aggregate events
- Calculated for each channel



## Instrument Service Plans

To help you get the most out of your CellStream™ flow cytometry system, our worldwide service organization offers a variety of service plans to support your individual needs and maintain the longevity of your instrument. Our service agreements are structured yet flexible, so you can select the level of hardware, application and software support you prefer.

### Advantages of maintaining a service plan:

- Best-in-class service support maintains optimal performance, enabling high-quality data
- Planned instrument maintenance reduces overall service costs
- Service plans are the best protection for your instrument investment and its long-term operation

### Instrument Service Plan Options

Service Plan Features*	One-Year Warranty	Service Total™ Plan	Service Advanced™ Plan	Service Essential™ Plan
Travel & Labor Expenses	•	•		
Coverage of Parts	•	•		
Preventative Maintenance Visit		•	•	•
Factory Trained & Authorized Service Engineers	•	•	•	•
Technical Support Services	•	•	•	•
Priority Scheduling	•	•		
One visit for instrument diagnostics or basic repairs			•	

\*No service contract is required for one-time service requests.

### Our highly-qualified field application and instrument specialists also provide:

- Support by email or phone
- On-site instrument training
- On-site scientific applications support

For more information on our comprehensive range of service and support agreements, please contact your sales representative or visit [EMDMillipore.com/cellstream](http://EMDMillipore.com/cellstream).

## System Performance

Parameter	Performance
Fluorescence sensitivity	MESF <10 FITC MESF <5 PE
CV* (precision)	<3%
Number of channels	Up to 22 (20 fluorescent, plus FSC, SSC)
Number of lasers	1-7
Available lasers	375, 405, 488, 532, 561, 642, 730 nm
Camera-enabled morphology parameters	3 (area; aspect ratio; raw max. pixel)
Event rate	20,000 cells/second
Flow rates	3.66 µL/min (Low speed/high sensitivity) 14.64 µL/min (High speed)
Scatter resolution	FSC <300 nm from 450 nm SSC <200 nm from 785 nm
Dynamic range	7 decades
System size (W × D × H)	440 × 625 × 495 mm
Field upgradeable	Yes
Sample formats	Single tube or 96-well plate
Absolute Cell Counting	Yes

\*Coefficient of Variation using Chicken Erythrocyte Nuclei (CEN)

## Ordering Information

Description	Cat. No.
CellStream™ Base System with 488 nm laser and AutoSampler	CS-100196
CellStream™ Four-Laser System with 488 nm, 642 nm, 405 nm, 561 nm lasers and AutoSampler	CS-100496
CellStream™ Option 375 nm Laser	CS-200375
CellStream™ Option 405 nm Laser	CS-200405
CellStream™ Option 532 nm Laser	CS-200532
CellStream™ Option 561 nm Laser	CS-200561
CellStream™ Option 642 nm Laser	CS-200642
CellStream™ Option 730 nm Laser	CS-200730
CellStream™ Software Multi Access	CS-300300
CellStream™ Calibration Reagent	CS-400104
CellStream™ On-Site Training	CS-500200
CellStream™ Installation	CS-600200
CellStream™ IQOQ Document	CS-600250

"Absolute Cell Counting" "Yes"

## To place an order or receive technical assistance

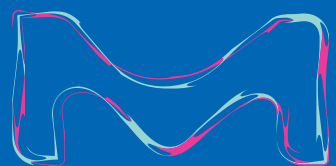
In the U.S. and Canada, call toll-free 1-800-645-5476

For other countries across Europe and the world, please visit: [EMDMillipore.com/offices](https://www.EMDMillipore.com/offices)

For Technical Service, please visit: [EMDMillipore.com/techservice](https://www.EMDMillipore.com/techservice)

[EMDMillipore.com/cellstream](https://www.EMDMillipore.com/cellstream)

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Lit. No. MS\_BR1380EN Ver. 1.0  
2018 - 13114  
06/2018