Guava EasyCyte™ Systems

Expanding the potential of flow cytometry

Guava easyCyte™ Systems

- Flexible
- Intuitive
- Affordable

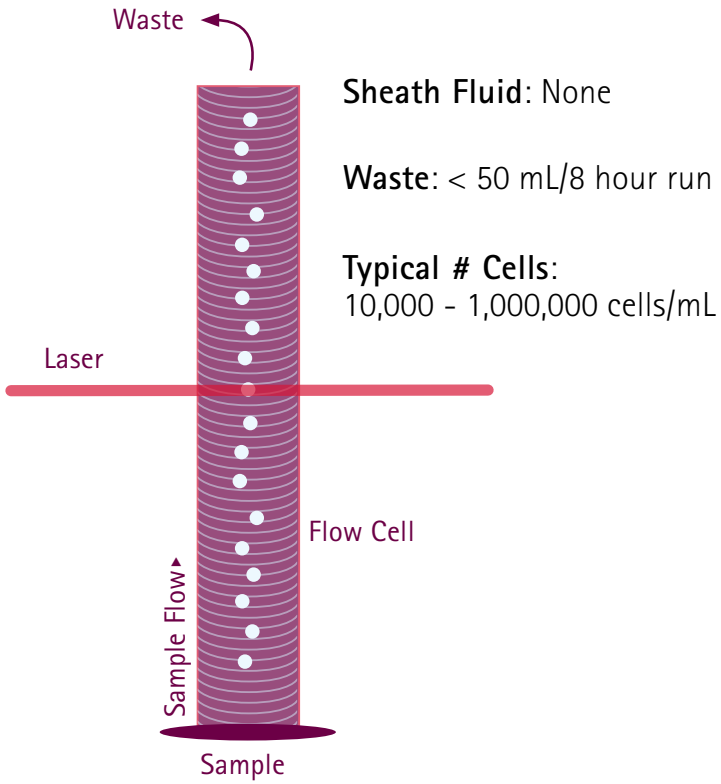
Merck Millipore is a division of MERCK

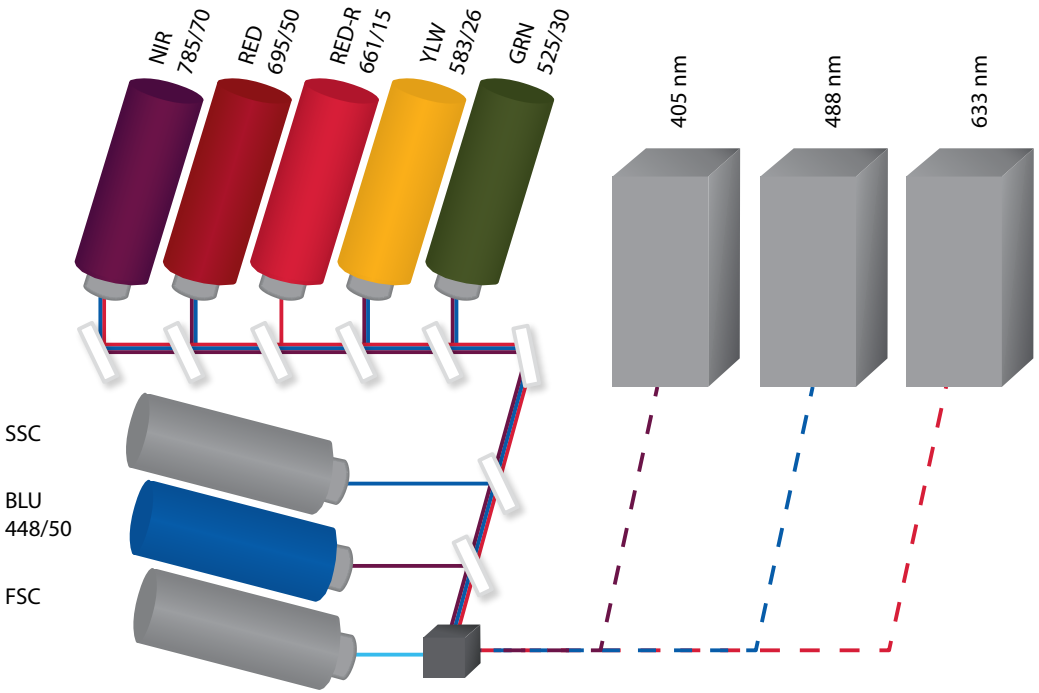
Unleash what's possible

Fifteen years ago, Guava Technologies introduced the first compact benchtop flow cytometers. Today, the guava easyCyte™ line has been updated to offer up to 3 lasers and 12 parameters with greater sensitivity and optional high throughput capabilities. Powered by intuitive software, the guava easyCyte™ flow cytometers are some of the most dynamic and flexible benchtop systems available.

- Up to 3 lasers and 12 parameters on a benchtop instrument
- Detection of particles as small as 0.2 µm
- Microcapillary fluidics design eliminates sheath fluid and waste carboys
- Intuitive software includes comprehensive cell-health related assays
- High-throughput option for walk-away acquisition of up to 96 samples

Microcapillary Flow Cytometry





Inside the guava easyCyte™ 12 systems

How it Works

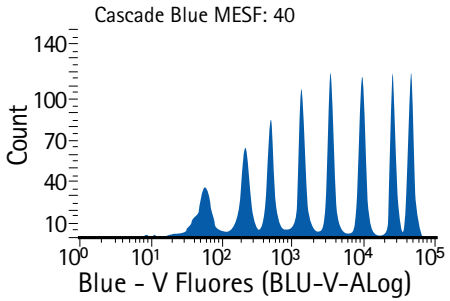
The guava easyCyte™ systems use patented, microcapillary, laser-based technology capable of detecting mammalian and microbial cells and beads. A sample of fluorescently labeled cells is aspirated into a uniquely proportioned microcapillary flow cell. Forward and side scatter characteristics are detected by photodiode, and fluorophores excited by the violet, blue, or red laser emit signals that are spectrally filtered to resolve up to 10 fluorophores simultaneously.

	Blu - V	GRN - V	YEL - V	RED - V		
405 nm - Violet Laser	(448/50) BV421™ Cascade Blue	(525/30) BV520™ Cascade Green	(583/26) BV605™	(695/50) BV650™		
		GRN - B	YEL - B	RED - B	NIR - B	
488 nm - Blue Laser		(525/30) FITC AF® 488	(583/26) PE	(695/50) PE-Cy5.5	(785/70) PE-Cy7	
				RED - R	NIR - R	
633 nm - Red Laser				(661/15) APC Cy5	(785/70) APC-Cy7 APC-AF® 750	

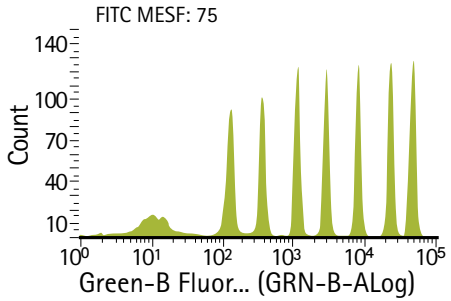
Sensitive and specific

Spherotech 8-color beads analyzed on the guava easyCyte™ 12 system demonstrate the instrument's proficiency for resolving adjacent fluorophores in multiple detection channels.

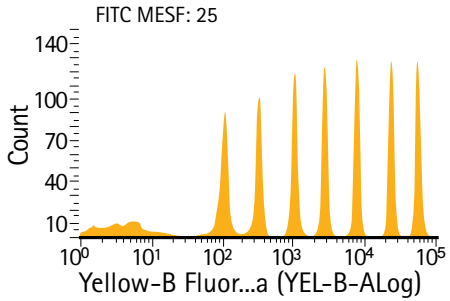
Blue Fluorescence – 405nm laser



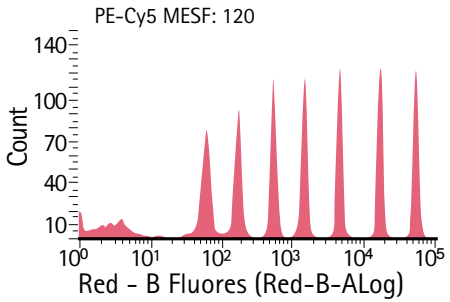
Green Fluorescence – 488nm



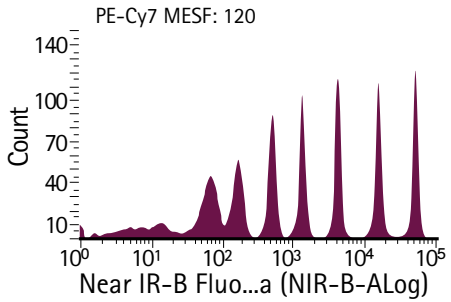
Yellow Fluorescence – 488nm



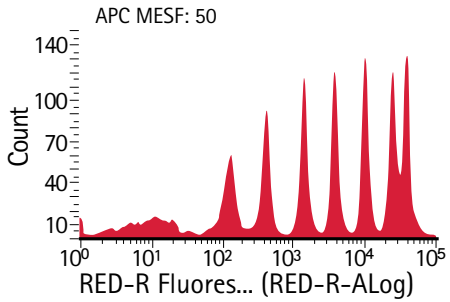
Red Fluorescence – 488nm laser



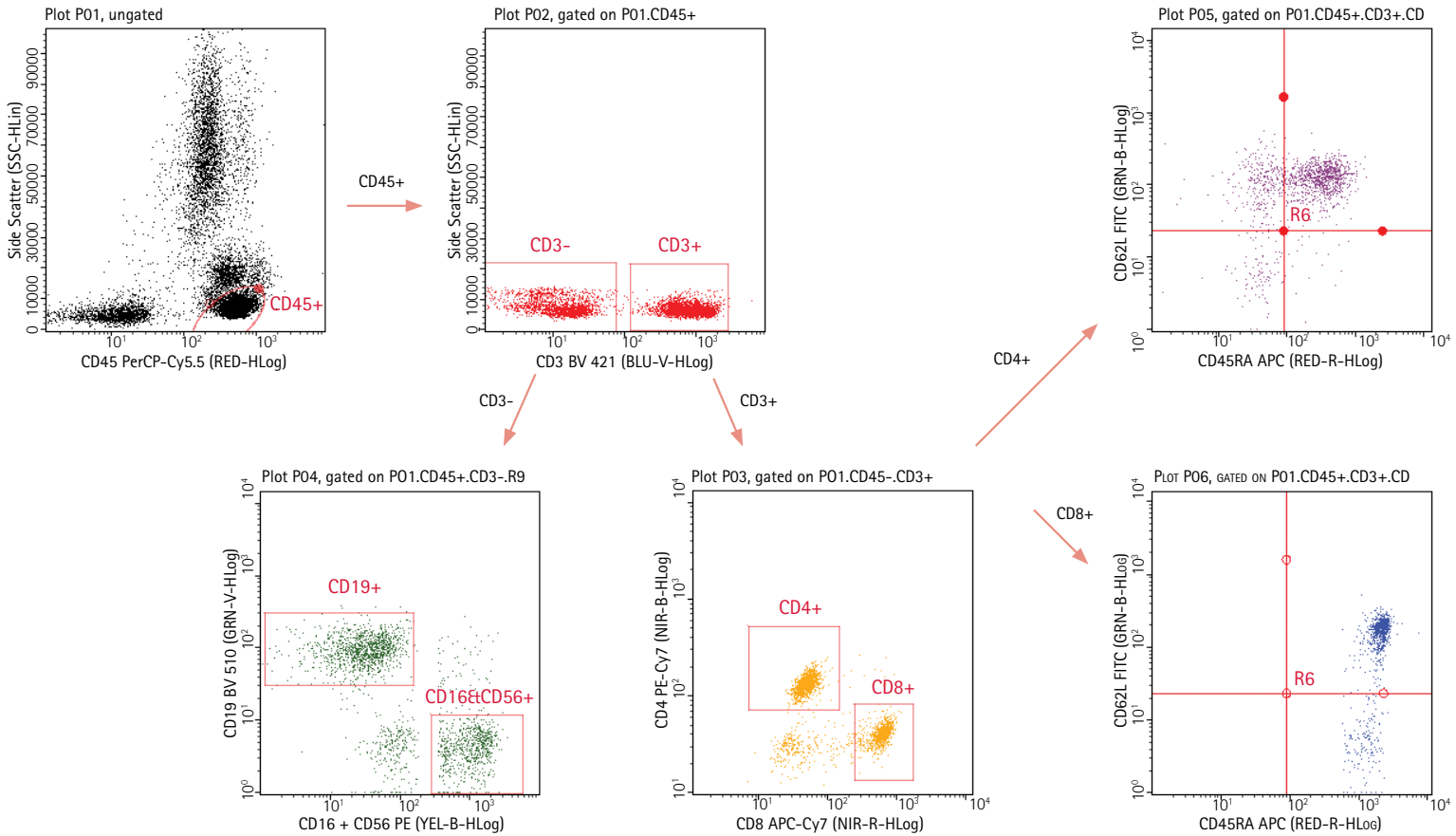
NIR Fluorescence – 488nm laser



Red Fluorescence – 633nm laser



Immunological Phenotyping



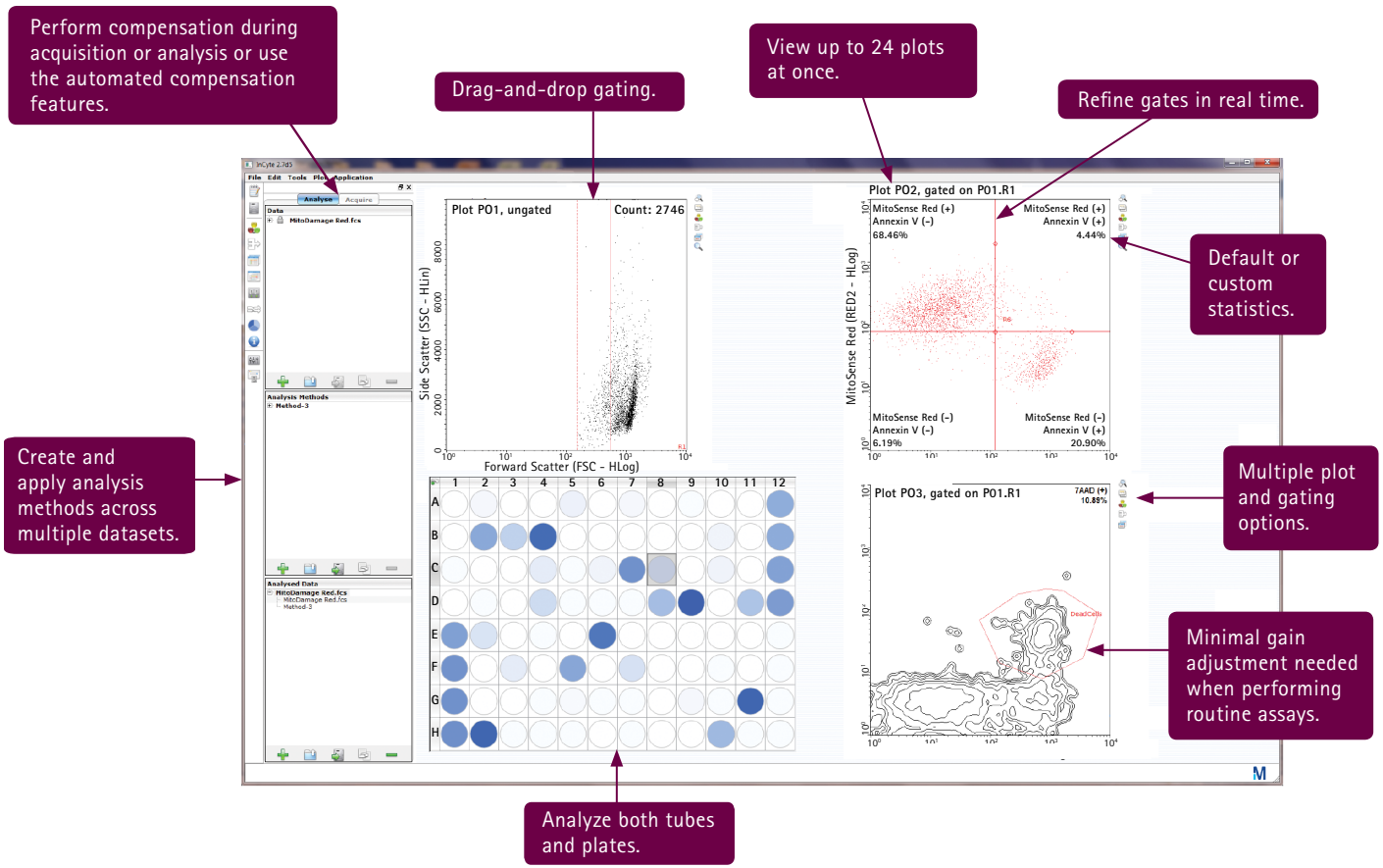
10 µL adult human blood was stained for 20 minutes at room temperature with a cocktail containing anti-CD45 PerCP-Cy5.5, anti-CD3 Brilliant™ Violet 421, anti-CD4 PE-Cy7, anti-CD8 APC-Cy7, anti-CD16+CD56 PE, anti-CD19 Brilliant™ Violet 510, anti-CD45 RA APC, and anti-CD62L FITC. After incubation, cells were lysed and fixed with 180 µL Guava® lysing solution for 15 minutes at room temperature. Samples were then acquired on the guava easyCyte™ 12HT system. Lymphocytes identified as CD45+ were selected and subsequently gated into a SSC vs. CD3 plot. T cells (CD3+ and CD45+) were gated into a CD4 vs CD8 plot. CD4+ and CD8 + T cells were subtyped by evaluating each population using CD45RA and CD62L to differentiate naive from memory cells. To distinguish natural killer (NK) and B cells, CD3-negative cells were gated into a plot comparing CD19 (B cells) and CD16+56 (NK cells).

Software

The guavaSoft™ operating system software provides access to modules for acquisition and analysis, as well as instrument setup and maintenance. The guavaSoft™ system includes templates for use with a wide range of EMD Millipore flow cytometry kits to simplify your experiments and data collection. Additionally, the guavaSoft™ package includes InCyte™ software, an intuitive open software package for custom analysis. Results can be exported to spreadsheets or as industry-standard FCS 2.0 or 3.0 files for further analysis. GuavaSoft™ software includes 21 CFR Part 11-enabling features.

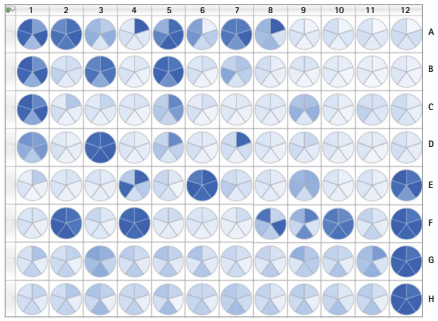
InCyte™ Software: Intuitive

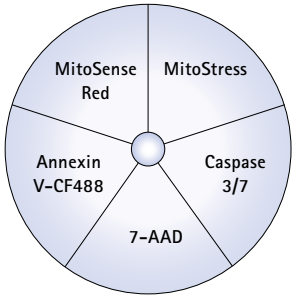
EMD Millipore's InCyte™ software has an intuitive, easy-to-use interface that enables you to focus on data at the sample or experimental level. The software simplifies setup and analysis of plots with drag-and-drop features, while automated compensation makes it easy to perform complex, multi-color assays. The instant update feature responds in real time to change analysis conditions for viewing. The multiparameter heat mapping function allows analysis of entire plates of data in the time previously required to analyze a single sample. These features provide a simple and rapid means to attain a macroscopic view of experiment "hits" and easily compare different experiments in real time. InCyte™ software is especially useful for interpreting the results of high-throughput cell-based assays.



InCyte™ Software Heat Map View

HeLa 24 hours





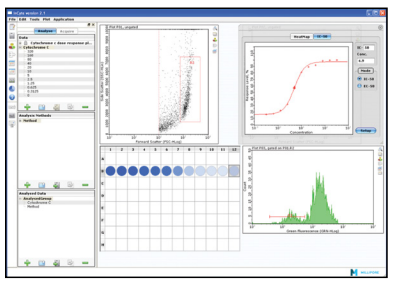
Combine groups of data to construct heat maps, IC_{50}, or EC_{50} curves.

HeLa cells in microtiter plates were treated with various cytotoxic compounds for 24 hours. Cells were stained using EMD Millipore's MitoDamage, MitoCaspase, or MitoStress kits. Cells were acquired on the guava easyCyte™ system and percent population data were compared in a heat map format using EMD Millipore's InCyte™ Software. The InCyte™ heat map function facilitated the rapid identification of compounds inducing positive results, by comparison of all 5 parameters simultaneously as shown in the pie charts above. The data show the results for cells treated with 80 different compounds in a single plate.

IC_{50} Determination within InCyte™ Software

IC_{50} determination using the Cytochrome c Kit and analyzed with the built-in IC_{50}/EC_{50} curve fitting feature of InCyte™ software. Cells were acquired on the guava easyCyte™ 8HT system. Plot A shows the drag and drop gating strategy used for the IC_{50} determination. Plot B shows the IC_{50} curve results for gambogic acid and Plot C shows the IC_{50} for etoposide. The once-complex task of generating the IC_{50} or EC_{50} curve for a given compound is automated by InCyte™ based on quantitation of fluorescent signal.

A.



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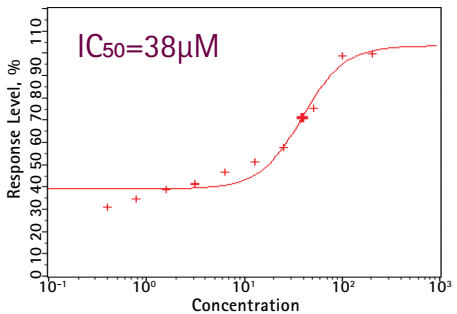
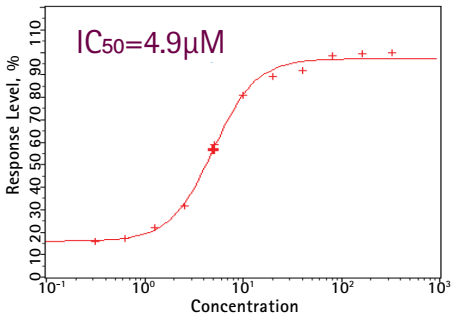
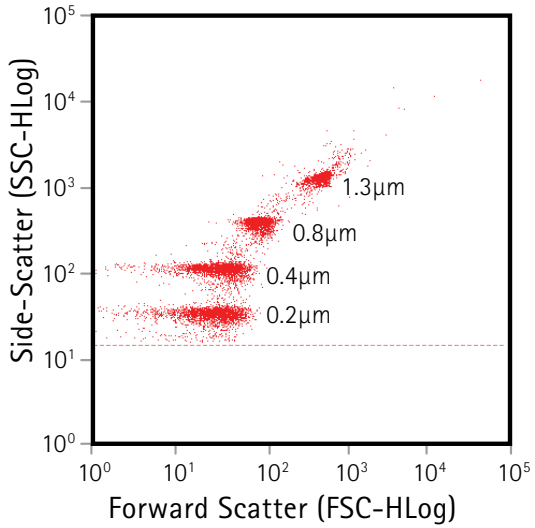


C.



Small Particle Detection

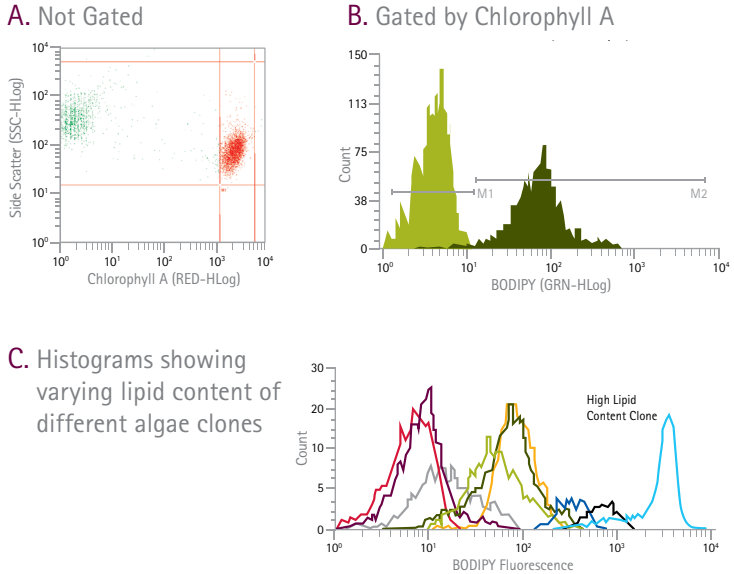
The guava easyCyte™ 8 and 12 systems have been shown to detect particles as small as 0.2 µm, a significant improvement over typical flow cytometers. This increased resolution and sensitivity means better separation, making gating and identification of dim populations easier. These capabilities may prove particularly useful for researchers analyzing particulates, beads, bacteria or algae.



Acquisition of a mixture of beads of known size demonstrates the ability of guava easyCyte™ 12 instruments to detect and discriminate particles as small as 0.2 µm.

Turning algae into biofuels

easyCyte™ systems are currently participating in algal biomass laboratories worldwide, where flow cytometry facilitates selection of high lipid content strains and efficient monitoring of cultures. Because microcapillary systems require smaller sample volumes, generate significantly less waste, have lower operating costs, enable high sample throughput, and have a small instrument footprint, they are a natural choice for demanding laboratory settings.



Lipid measurement of chlorophyll A-positive algae. Identification of algal cells containing chlorophyll A; chlorophyll A fluoresces in the red channel (A). Gate applied to select for chlorophyll A-positive cells (B). Histograms showing a wide range of lipid content (as evidenced by BODIPY green fluorescence intensity) for a variety of algal strains (C), with one clone showing as much as 500 times the lipid content as others.

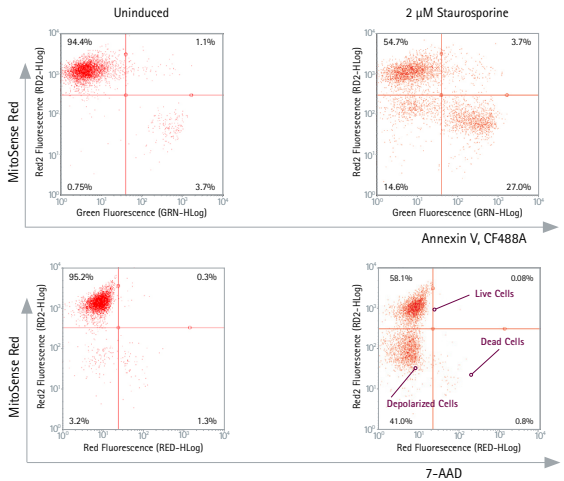
Flow Cytometry Reagents

The diverse EMD Millipore portfolio of reagents and assays facilitate fluorescence-based detection of proteins and nucleic acids, and have been validated for use on the guava easyCyte™ instrument platform.

FlowCellect® Flow Cytometry Kits

EMD Millipore's optimized, turnkey assay kits reduce sample preparation time, minimize assay development and simplify data analysis.

We offer more than 60 FlowCellect kits optimized for key assays in cell health, immunology and cell signaling.



The FlowCellect® MitoDamage Kit for Flow Cytometry contains MitoSense Red, a fluorescent cationic dye that accumulates in the mitochondria and is responsive to changes in mitochondrial potential, a hallmark of early apoptosis.

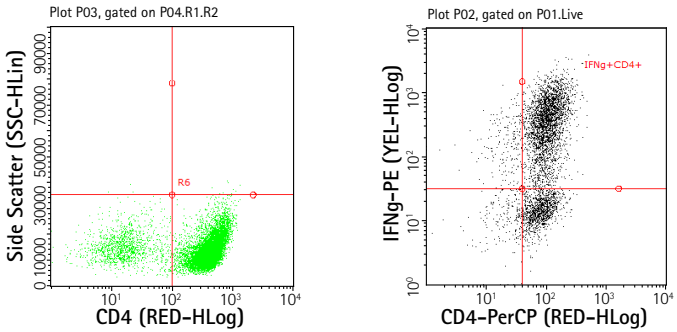
Dot plots depicting Jurkat cells treated with multiple inducers and stained using MitoDamage kit. Dot plots of cells treated or not with staurosporine to induce apoptosis and acquired on the guava easyCyte™ 12HT system show percentages of cells positive for MitoSense Red (left). The guavaSoft™ MitoDamage module facilitates experiment-level assessment of changes in mitochondrial potential that signal early apoptosis via heat mapping of up to 96 samples.

Fluorescence-conjugated Flow Cytometry Antibodies

Choose from EMD Millipore's growing portfolio of over 1500 conjugated antibodies, including antibodies specific to many CD markers and immune signaling targets. With the reliability and quality of Upstate, Chemicon and Calbiochem, EMD Millipore's conjugated antibodies validated for flow cytometry are available in multiple colors, to enable you to unequivocally discriminate cell subpopulations:

- FITC
- APC
- PE-Cy7
- PerCP-Cy5.5
- PE
- PE-Cy5
- APC-Cy7
- Violet450

All of our flow-validated antibodies come with our 100% performance and satisfaction guarantee.



Mouse peripheral blood cells gated on lymphocytes (left) were stained with |Milli-Mark FCMAB244CP5 anti-mouse CD4 (clone GK1.5) PerCP/Cy5.5. CD4+Th1 cells were identified (right) by costaining with FCMAB243P, anti-mouse IFN gamma (clone XMG1.2) PE. Data were analyzed with InCyte™ software on a guava easyCyte™ HT cytometer.

SmartFlare™ Live Cell RNA Detection

- Detect RNA expression in live cells for real time, physiologically relevant data
- Eliminate laborious, costly sample preparation
- Nanoparticle-based technology that allows cells to be used for downstream assays
- Developed and validated on the guava easyCyte™ systems

guava easyCyte™ Single Sample System

System	easyCyte™ 5	easyCyte™ 6-2L	easyCyte™ 8	easyCyte™ 12
Catalogue No.	0500-5005	0500-5007	0500-5008	0500-5012
Violet (405 nm) Laser				✓
Blue (488 nm) Laser	✓	✓	✓	✓
Red (633 nm) Laser		✓	✓	✓
FSC	✓	✓	✓	✓
SSC	✓	✓	✓	✓
Blue-V (448/50 nm)				✓
Green-V (525/30 nm)				✓
Yellow-V (583/26 nm)				✓
Red-V (695/50 nm)				✓
Green-B (525/30 nm)	✓	✓	✓	✓
Yellow-B (583/26 nm)	✓	✓	✓	✓
Red-B (695/50 nm)	✓	✓	✓	✓
NIR-B (785/70 nm)			✓	✓
Red-R (661/15 nm)		✓	✓	✓
NIR-R (785/70 nm)			✓	✓
Microcapillary Fluidics	✓	✓	✓	✓
Direct, Absolute Cell Counts	✓	✓	✓	✓
Automation-plate and tubes				
Mixing				
Dell® Laptop	✓	✓	✓	✓
InCyte™ Software	✓	✓	✓	✓
Digital Signal Processing	✓	✓	✓	✓

guava easyCyte™ HT System

System	easyCyte™ 5HT	easyCyte™ 6HT-2L	easyCyte™ 8HT	easyCyte™ 12HT
Catalogue No.	0500-4005	0500-4007	0500-4008	0500-4012
Violet (405 nm) Laser				✓
Blue (488 nm) Laser	✓	✓	✓	✓
Red (633 nm) Laser		✓	✓	✓
FSC	✓	✓	✓	✓
SSC	✓	✓	✓	✓
Blue-V (448/50 nm)				✓
Green-V (525/30 nm)				✓
Yellow-V (583/26 nm)				✓
Red-V (695/50 nm)				✓
Green-B (525/30 nm)	✓	✓	✓	✓
Yellow-B (583/26 nm)	✓	✓	✓	✓
Red-B (695/50 nm)	✓	✓	✓	✓
NIR-B (785/70 nm)			✓	✓
Red-R (661/15 nm)		✓	✓	✓
NIR-R (785/70 nm)			✓	✓
Microcapillary Fluidics	✓	✓	✓	✓
Direct, Absolute Cell Counts	✓	✓	✓	✓
Automation-plate and tubes	✓	✓	✓	✓
Mixing	✓	✓	✓	✓
Dell® Laptop	✓	✓	✓	✓
InCyte™ Software	✓	✓	✓	✓
Digital Signal Processing	✓	✓	✓	✓

Ordering Information

Description	Catalog Number
Single Sampling Instruments	
guava easyCyte™ 5 Base System	0500-5005
guava easyCyte™ 6-2L Base System	0500-5007
guava easyCyte™ 8 Base System	0500-5008
guava easyCyte™ 12 Base System	0500-5012
High Throughput Sampling Instruments	
guava easyCyte™ 5HT Base System	0500-4005
guava easyCyte™ 6HT-2L Base System	0500-4007
guava easyCyte™ 8HT Base System	0500-4008
guava easyCyte™ 12HT Base System	0500-4012
Software Modules for guava easyCyte™ Systems	
guavaSoft™ Software Package (includes InCyte™, Express Pro, Express Plus and guavaSuite™ modules)	0500-4115
InCyte™ Software Module	0500-4120

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