Cellometer® Spectrum

Image Cytometry System for 20 µl Cell-Based Assays

Cell Cycle
Apoptosis
Cell Mediated Cytotoxicity
Cell Counting and Viability
Interchangeable Fluorescent Modules

Cellometer® Spectrum

Nexcelom Bioscience

level
Discovering
new boundaries

進階生物科技股份有限公司
服務專線：0800-251302

Features of the Spectrum™ Image Cytometry System

✓ **All-in-One System**

Basic cell counting, primary cell viability, and cell-based assays.

✓ **Dual-Fluorescence for Accurate Primary Cell Viability**

No interference from red blood cells. Analyze bone marrow, peripheral blood, and cord blood without lysing.

✓ **Unique Algorithms for Advanced Cell Analysis**

Determine concentration and viability of hepatocytes, adipocytes, and other sophisticated cell types.

✓ **Fast Results**

Obtain cell images, counts, size measurements and viability calculations in < 30 seconds per sample.

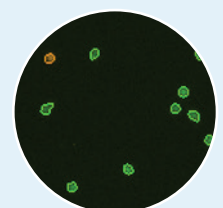## Simple 20 µl Cell-Based Assays

- Pre-qualified reagents
- Small 20 µl sample size
- Simple, image-based analysis
- Pre-defined instrument settings
- Assay-specific data templates
- Accurate, consistent results

1. Pipette 20 µl

2. Insert slide & count

3. Get images & data

Cell Types for Many Research Areas

Optimized for primary cell analysis

PBMCs	Epithelial Cells
Stem Cells	Keratinocytes
Adipocytes	Lymphocytes
Neural Cells	Splenocytes
Hepatocytes	Monocytes
Dendritic Cells	

- **Clinical Immunology:** PBMCs
- **Diabetes / Obesity:** Adipocytes
- **Immunotherapy:** Leukocytes
- **Microbiology:** Yeast (Spectrum 10x)
- **Oncology:** Cell Lines
- **Regenerative Medicine:** Stem Cells
- **Toxicology:** Hepatocytes
- **Transplantation:** Nucleated Cells
- **Vaccine Development:** Splenocytes

Advantages of Cellometer Image Cytometry

✓ **Cell Imaging**
- Visually check cell morphology
- Ensure only cells of interest are counted
- Archive and re-analyze cell images
- Export images for publication

✓ **Proprietary Pattern-Recognition Software**
- Count individual cells in clusters
- Count irregular-shaped cells
- Count cells based on size
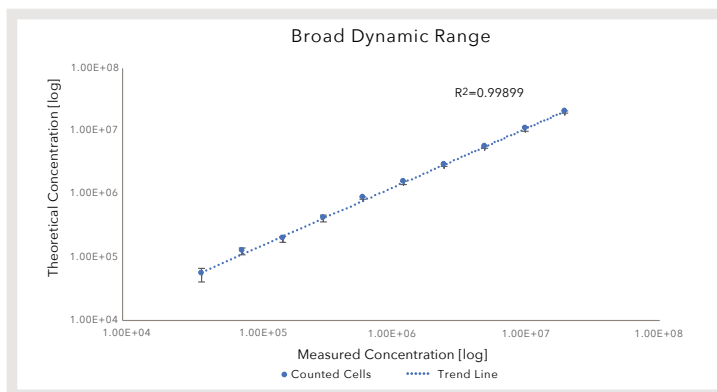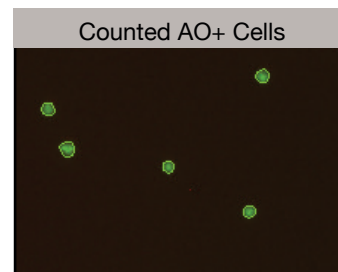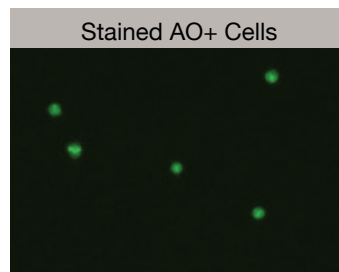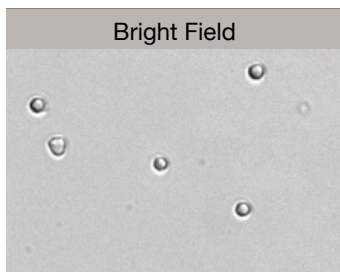- Eliminate debris from cell counts

✓ **Non-Fluidic Platform**
- Disposable counting chambers - no washing
- Compatible with fragile cells
- Maintenance-free
- Robust optics modules and LED light sources

✓ **IQ/OQ Validation and GMP/GLP Accessories**
- Installation Qualification reagents/protocol
- Operational Qualification reagents/protocol
- On-site IQ or OQ Performance
- GMP/GLP Software Module

Accurate Cell Counting

Bright Field

Stained AO+ Cells

Counted AO+ Cells

Broad Dynamic Range
$R^2 = 0.99899$
Theoretical Concentration [log]
Measured Concentration [log]
• Counted Cells   ••••• Trend Line

- Automatic identification of Acridine Orange (AO) stained cells (shown above)
- Image and count up to 2×10^7 cells/mL
- Image acquisition and analysis: 30 seconds/sample for a 3-channel assay
- Versatile platform - use for routine cell counting and complex cell-based assays

Export to FCS Express™* for Flow-Like Data

Counted PI+ Cells

Contour Population Plot

Size (micron)
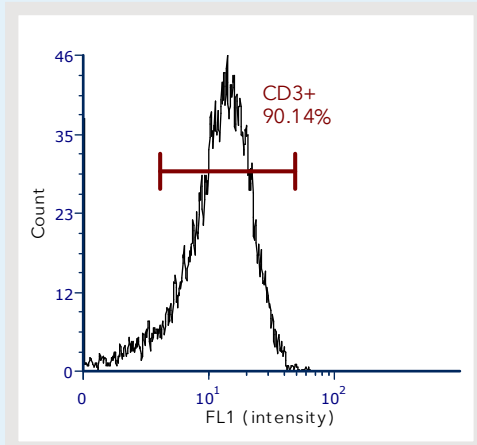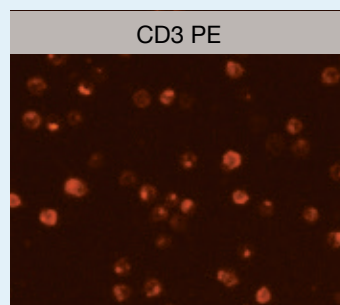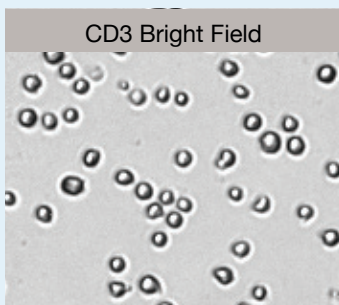
FL 1 (intensity)
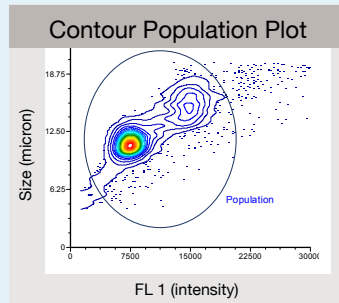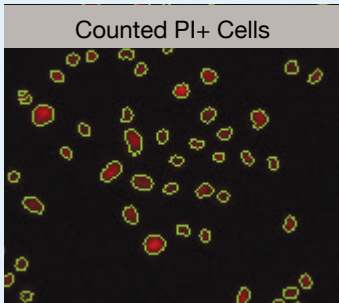
Population

- Export image data into flow cytometry software: FCS Express™

- Simple work flow: No fluid-stream, No PMT voltages, No forward/side scatter

- Easily perform data analysis using pre-designed templates

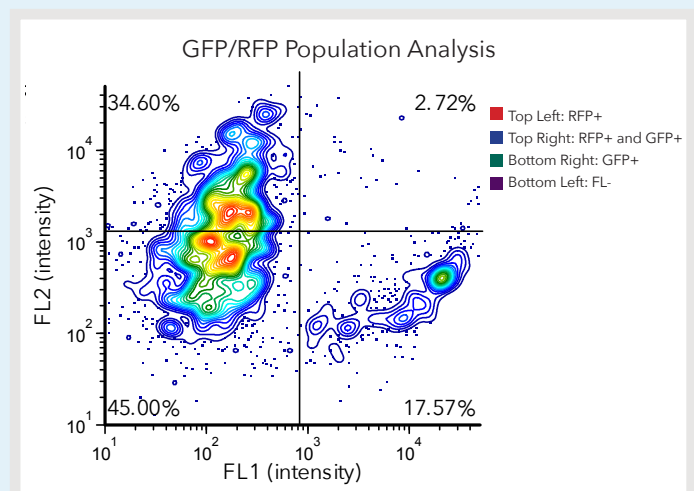- Quickly plot cell population data as a: histogram, scatter, dot or contour plot

Propidium Iodide (PI) Cell Cycle

Counts

PI (intensity)

Legend
- Sub G1
- G0/G1
- S
- G2/M
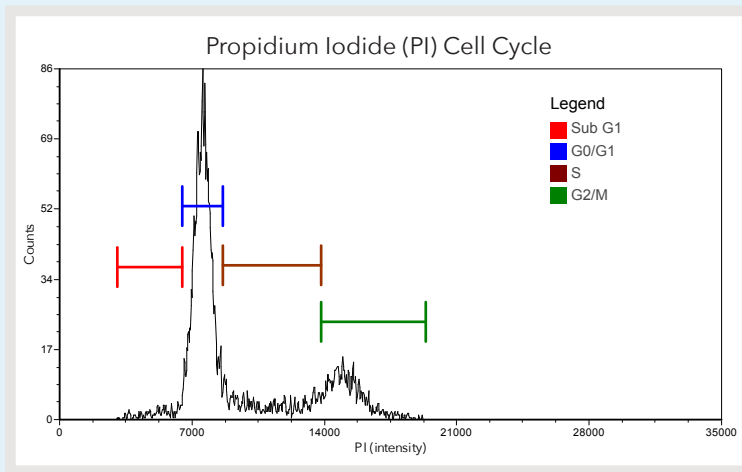
Cell Population	% of Gated Cells	Concentration (10^6 cells/mL)
Total	100	3.18
Sub G1	3.8	0.12
G0/G1	61.9	1.97
S	15.3	0.49
G2/M	19	0.60

FCS Express™ Flow Cytometry software is a product of De Novo Software™ and is included with the Cellometer Spectrum™

CD3 Bright Field

CD3 PE

GFP/RFP Population Analysis

FL2 (intensity)

FL1 (intensity)

34.60%

2.72%

45.00%

17.57%

- Top Left: RFP+
- Top Right: RFP+ and GFP+
- Bottom Right: GFP+
- Bottom Left: FL-

Contour map of Jurkat cells, showing GFP+ and RFP+ intensity profiles.

Count

CD3+
90.14%

FL1 (intensity)

Histogram of PE CD3+ Jurkat cells

Bright Field

GFP/RFP Positive Cells

Proven Results

Measured Jurkat Cell Viability

$R^2 = 0.99498$
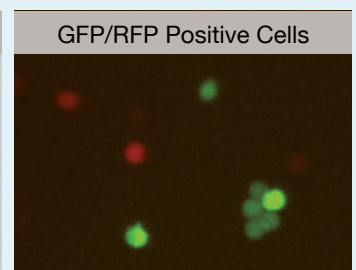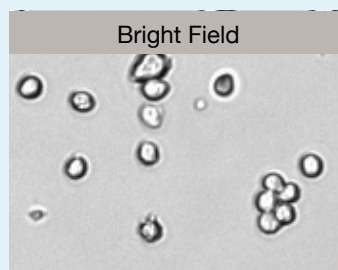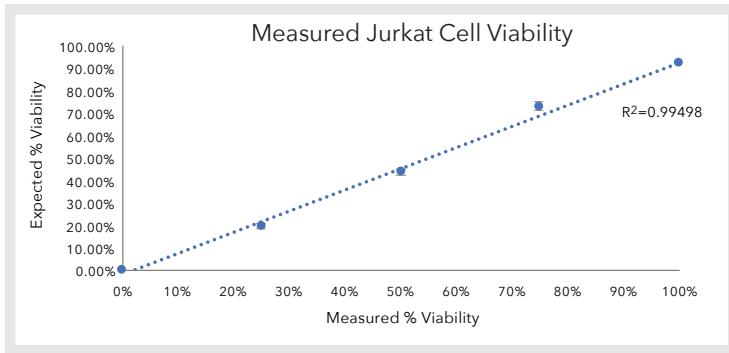
- Determine cell viability, for cell lines or primary samples, using AO/PI in seconds

- Accurately measure cell samples with varying viability (0 - 100%)

Bright Field

Stained AO+ Cells

Stained PI Cells

Combined Counted Cells
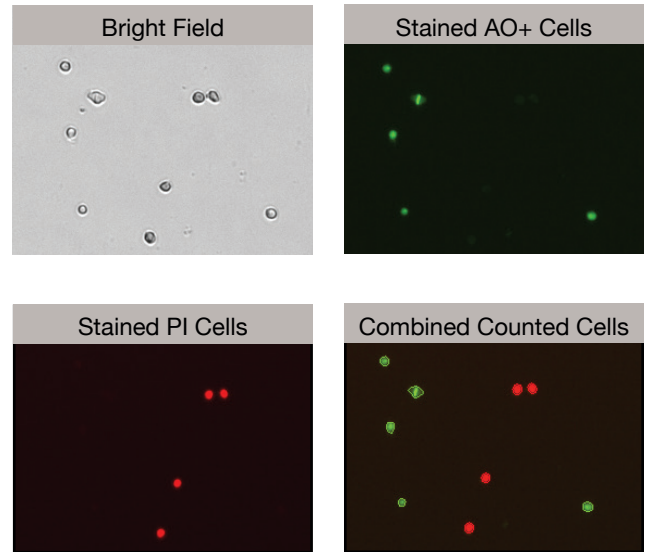
Accurately count Live (AO) versus Dead (PI) cells.

User-Changeable Fluorescence Optics Modules*

Cellometer assays use specific optic modules for maximum performance and discrimination between fluorescence channels. Example filter modules are listed below. Additional filter modules available upon request. Please check our website for the most recent modules available.

Optics Module	Fluorophores	Nucleic Acid Stains
S1-534-470 Ex: 470nm (452-498nm) Em: 534nm (510-560nm)	GFP Calcein FITC AlexaFluor® 488	AO (acridine orange) SYTO®9, SYTO®13 SYTOX®Green SYTO®BC
S1-605-527 Ex: 527nm (498-550nm) Em: 605nm (570-638nm)	AlexaFluor® 546 AlexaFluor® 555 Cy3® PE (R-phycoerythrin) RFP	PI (propidium iodide) EB (ethidium bromide) SYTOX® Orange
S1-655-527 Ex: 527nm (525-558nm) Em: 655nm (642-665nm)	RFP 7-AAD Nile Red	PI (propidium iodide) EB (ethidium bromide)

This table is a partial list of compatible fluorophores, nucleic acid stains, and fluorescent proteins. Please contact Nexcelom technical support regarding compatibility of other reagents.

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Which Instrument is Right for Me?

Features	Bright Field Cell Counters			Fluorescent Viability Cell Counters				Image Cytometers				
	Mini	Auto T4	Auto 1000	Auto 2000	X1	X2	K2	Spectrum	Spectrum (10x)	Celigo BF	Celigo 4 Channel	Celigo 5 Channel
Cell / Sample Type												
Cell Line	X	X	X	X			X	X		X	X	X
Cultured Primary Cells	X	X	X	X			X	X		X	X	X
Algae									X			
Platelets						X			X			
Low Concentration Cell Lines				X			X	X		X	X	X
Yeast (Clean Sample)					X	X			X			
Yeast (Messy Sample)						X			X			
Primary cells (Messy Sample*)				X			X	X			X	X
PBMCs, Splenocytes, Stem Cells				X			X	X			X	X
Hepatocytes							X	X			X	X
Adipocytes***				X			X	X		X	X	X
Cell-Based Assay **					X	X	X	X	X	X	X	X
Apoptosis (Annexin V-FITC/PI)							X	X	X		X	X
Apoptosis (Caspase Activity)							X	X	X		X	X
Autophagy (CytoID-green)								X	X			
Cell Proliferation (CFSE)								X	X		X	X
Cell Cycle (PI)					X	X	X	X	X		X	X
GFP Transfection				X		X	X	X	X		X	X
RFP Transfection								X	X		X	X
Mitochondrial Potential (JC-1)								X	X		X	X
Multi-drug Resistance (ABC Transporter)								X	X		X	X
Surface Marker Analysis								X	X		X	X
Vitality (Calcein-AM/PI)						X	X	X	X		X	X
Vitality (CFDA-AM)						X			X			
Image Cytometry**								X	X		X	X

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