Cellometer Auto 2000 Cell Viability Counter
Optimized Analysis of Primary Cells

Features of the Cellometer Auto 2000

- Dual Fluorescence and bright field imaging: staining of both live and dead cells in heterogeneous samples
- All-in-One Design: Simple, space-saving design; robust instrument manufactured in the U.S., no maintenance
- User-friendly Touch Screen and Assay Selection: Enhanced user interface, operator dependability, minimal training, auto-save option
- Fast Results: Obtain cell images, counts, size measurements, and viability calculations in 30 seconds
- Small Sample Size: Only 20 µl of sample
- Broad Dynamic Range: Measurable concentration range of 1 x 10^5 to 1 x 10^7 cells/mL using Nexcelom’s patent-pending de-clustering function
- Many Compatible Dyes: Trypan blue, AO, PI, EB, 7AAD, AO/PI, AO/EB, Calcein AM, CFDA, Calcein AM/PI, CFDA/PI

Learn why thousands of users, including the top ten pharmaceutical companies, trust Cellometer.

On-Line Demonstrations are completed in just 20 to 30 minutes and provide an overview of how Cellometer works using existing images of cells that interest you.

On-Site Demonstrations are a convenient way to test a Cellometer system for a specific application. An experienced Applications Specialist will arrive at your lab for a hands-on session to test your cells and show how Cellometer can enhance your workflow.

Technical Seminars are an excellent way to introduce Cellometer systems to a lab group or collaborators in different laboratories within an organization. A trained biologist will discuss and demonstrate the capabilities and advantages of Cellometer image cytometry.

Call 978-327-5340 or E-mail info@nexcelom.com today to schedule a free demonstration or technical seminar.

Advantages of Cellometer Image Cytometry

- Cell Imaging
  - Verify cell morphology and counted live/dead cells
  - Export cell images for presentations and publications
- Pattern Recognition Software
  - Accurately count cells in clumps
  - Count irregular-shaped cells
  - Eliminate debris from cell counts
  - Differentiate cells based on size
- Automated Data Management
  - Pre-set assays and automated reports
  - Archive sample images and auto-save results
- Maintenance-free System
  - Disposable counting chambers – no wash steps
  - No required instrument maintenance

For more information, visit www.nexcelom.com

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Phone: 978.327.5340
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Nexcelom Bioscience offers a wide range of Cellometer systems developed and optimized for specific applications and cell types.
Cellometer Auto 2000 Cell Viability Counter
Optimized Analysis of Primary Cells

Features of the Cellometer Auto 2000
Dual Fluorescence and Bright Field Imaging: Imaging of both live and dead cells in heterogeneous samples.
All-in-One Design: Simple, space-savings design; robust instrument manufactured in the U.S., no maintenance.
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Primary Cell Analysis
Accurate concentration and % viability for primary cells. (PBMCs, stem cells, splenocytes, neurocells, and more)

Analysis of Cells from Heterogeneous Samples
Whole Blood
- Peripheral Blood
- Cord Blood
- Bone Marrow

Nucleated Cell Concentration & Viability
Evaluate cord blood and bone marrow samples

GFP Transfection Efficiency & Viability
Quickly and easily monitor DNA, RNA, and siRNA transfection

Transfection

GFP Transfection Efficiency & Viability

Dual-Fluorescence for Primary Cell Viability in Heterogeneous Samples

Why isn’t trypan blue recommended for viability analysis of primary cells?
Trypan blue dye enters and stains all cells with a compromised membrane, including both nucleated and non-nucleated cells. Because mature mammalian red blood cells do not contain nuclei, only live and dead mononuclear cells produce a fluorescent signal. There is no need to lyse red blood cells, saving time and eliminating an extra sample preparation step.

Primary cells
- PBMCs
- Splenocytes
- Neural cells
- Epithelial Cells
- Dendritic Cells

Stem Cells

Regenerative Medicine:
- Stem Cells
- Vaccines
- Neural Cells
- Epithelial Cells

Basic Research:
- Primary Cells / Cell Lines

Performance of the Cellometer Auto 2000 Cell Viability Counter

Figure 1: Table of results for cell concentration.

Figure 2: Table of results for cell viability.

The results show the reliability and accuracy of the Cellometer Auto 2000 in measuring cell concentration and viability of primary cells.

How It Works

1. Pipette 20µl
2. Insert Counting Chamber
3. Select Assay & Click Count
4. Get Results
Primary Cell Analysis

Accurate concentration and % viability for primary cells. (PBMCs, stem cells, splenocytes, keratinocytes, neural cells, and more)

Analysis of Cells from Heterogeneous Samples

- Whole Blood
- Peripheral Blood
- Cord Blood
- Bone Marrow

Nucleated Cell Concentration & Viability

Evaluate nucleated cell types in heterogeneous samples.

- PBMCs
- Nucleated Keratinocytes
- Keratinocyte Dermal Cells
- Neural Cells
- Epithelial Cells

Nucleated Cell Viability

Accurate concentration and % viability for nucleated cells including dead and non-nucleated cells.

Concentration & Viability

Accurate concentration & % viability for cell viability. Four measurements were performed for each sample. The viability average was calculated and plotted.

Why isn't trypan blue recommended for viability analysis of primary cells?

Trypan blue dye stains all cells with a compromised membrane. Because mature mammalian red blood cells do not contain nuclei, only live and dead mononuclear cells produce a fluorescent signal. There is no need to lyse red blood cells, saving time and eliminating an extra sample preparation step.

Figure 2: Table of results for cell viability using PI only.

Table: Live / Dead Cell Concentration using AO / PI

<table>
<thead>
<tr>
<th>Sample</th>
<th>N Value</th>
<th>Live Cells</th>
<th>Dead Cells</th>
<th>% Viability</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
<td>1.05E+05</td>
<td>0</td>
<td>98.7%</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>9.90E+04</td>
<td>4.10E+00</td>
<td>99.9%</td>
</tr>
<tr>
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<td>3.00E+00</td>
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Live / Dead Cell Concentration using AO / PI

Table: Assays Available for Selection

- Single Cell Count
- Multiple Species Analysis
- Dual-Fluorescence Viability
- Concentration & Viability
- Assay Settings
- User Help

Figure 3: Table of results for cell concentration.

Figure 4: Table of results for cell viability.

Proven Performance in Many Research Areas

- Clinical Immunology: PBMCs
- Regenerative Medicine: Stem Cells
- Transplantation: Nucleated Cells
- Vaccine Development: Splenocytes
- Oncology: Cell Lines
- Basic Research: Primary Cells / Cell Lines

How It Works

Pipette 20µl
Insert Counting Chamber
Select Assay & Click Count
Get Results

FEATURES

- One-Step Cell Viability
- Assay Settings
- Import Assays
- Data Verification
- Images for Current Assay
- Settings
- User Help

Performance of the Cellometer Auto 2000 Cell Viability Counter

- Dual-Fluorescence for Primary Cell Viability in Heterogeneous Samples
- Live / Dead Cell Concentration/Counting (AO / PI)
- Assay Settings
- User Help

Figure 1: Table of results for cell concentration.

Figure 2: Table of results for cell viability.

The results show the reliability and accuracy of the Cellometer Auto 2000 in measuring cell concentration and viability of heterogeneous cell populations.

The %CV at each concentration was below 10%. This data set was taken on a concentration series of primary mouse splenocytes.

The results indicate the accuracy of the Cellometer Auto 2000 instrument in assessing the viability of Jurkat cells using PI fluorescent signal. There is no need to lyse red blood cells, saving time and eliminating an extra sample preparation step.

Why isn't trypan blue recommended for viability analysis of primary cells?

Trypan blue dye stains all cells with a compromised membrane. Because mature mammalian red blood cells do not contain nuclei, only live and dead mononuclear cells produce a fluorescent signal. There is no need to lyse red blood cells, saving time and eliminating an extra sample preparation step.

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FEATURES

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The results show the reliability and accuracy of the Cellometer Auto 2000 in measuring cell concentration and viability of heterogeneous cell populations.

The %CV at each concentration was below 10%. This data set was taken on a concentration series of primary mouse splenocytes.
Primary Cell Analysis

Accurate concentration and % viability for primary cells. (PBMCs, stem cells, splenocytes, neural cells, and more)

Analysis of Cells from Heterogeneous Samples

Whole Blood
- Peripheral Blood
- Cord Blood
- Bone Marrow

PBMC Analysis in the Presence of Red Blood Cells

Measure PBMCs from whole blood without lysing. Obtain baseline PBMC concentration and viability prior to biomarker studies.

Nucleated Cell Concentration & Viability

Evaluate cord blood and bone marrow samples.

GFP Transfection Efficiency & Viability

Quickly and easily monitor GFP, YFP, and mRFP transfection.

Analysis of Cyma™ & Inquio™ Stained Cells

Nexcelom’s exclusive pattern-recognition software enables accurate analysis of H&E of mammalian cell types.

Cell line Analysis

Automatically capture fluorescent cell images, concentration, Trypan blue or PI viability, and mean diameter in 30 seconds!

Proven Performance in Many Research Areas

- Clinical Immunology: PBMCs
- Regenerative Medicine: Stem Cells
- Transplantation: Nucleated Cells
- Vaccine Development: Splenocytes
- Oncology: Cell Lines
- Basic Research: Primary Cells / Cell Lines

How It Works

Optimized for Primary Cell Analysis

- Stable Wash Free
- Touch Screen
- Images for Data Verification
- Live Cell and Dead Cell Import Analysis
- Cell Size Histogram

FEATURES

- Live & Dead Cell Analysis
- Single- and Dual-Fluorescence Assays
- Live / Dead Cell Concentration using AO / PI
- One-Step Cell Viability (PI, Trypan blue, or Live/Dead)
- Accurate PBMC Concentration & Viability
- Dual-Fluorescence Viability

Proven Performance in Many Research Areas

- Basic Research: Primary Cells / Cell Lines
- Clinical Immunology: PBMCs
- Regenerative Medicine: Stem Cells
- Transplantation: Nucleated Cells
- Vaccine Development: Splenocytes
- Oncology: Cell Lines
- Manufacturing: Nucleated Cells
- Research: Primary Cells / Cell Lines

Cellometer Auto 2000 Cell Viability Counter for Primary Cells from Nexcelom Bioscience

Dilution Factor

R

y = 1E+07x

Assays Available for Selection

- Primary Cell Analysis
- Nucleated Cell Concentration & Viability
- Live / Dead Cell Concentration using AO / PI
- One-Step Cell Viability (PI, Trypan blue, or Live/Dead)
- Accurate PBMC Concentration & Viability
- Dual-Fluorescence Viability

Why isn’t trypan blue recommended for viability analysis of primary cells?

Trypan blue dye will enter and stain all cells with a compromised membrane, including both nucleated and non-nucleated cells. This can result in an overestimation of cell viability. For increasing accuracy, propidium iodide (PI) is recommended for primary cells.

Dual-Fluorescence Viability

Using acridine orange (AO) and propidium iodide (PI), the recommended method for accurate viability analysis of primary cells, such as PBMCs, splenocytes, and stem cells. The PI fluorescent signal is specific to nuclei, only live and dead mononuclear cells produce a fluorescent signal. Because nucleated red blood cells do not contain nuclei, only live and dead mononuclear cells produce a fluorescent signal. There is no need to lyse red blood cells, saving time and eliminating an extra sample preparation step.

Because mature mammalian red blood cells do not contain nuclei, only live and dead mononuclear cells produce a fluorescent signal. For the most accurate calculation of nucleated cell viability, fluorescent nuclear staining dyes are required.

Accurate PBMC Concentration & Viability

Obtain PBMCs from whole blood without lysing. Obtain baseline PBMC concentration and viability prior to biomarker studies.

Nucleated Cell Types

- Bone Marrow
- Cord Blood
- Peripheral Blood
- Whole Blood

Cell Size & Concentration

Live Cells

Dead Cells

Sample N Value Average Live Cell Concentration % Viability CV of Concentration CV of Viability

A 4 4.20E+06 91.1 10% 2%
B 4 1.06E+06 22.7 7% 1%
C 4 2.25E+06 37.5 7% 1%
D 4 1.09E+07 20.6 7% 1%
E 4 3.12E+07 25.8 7% 1%
F 4 4.20E+07 15.2 7% 1%

Figure 1: Table of results for cell concentration.

Data shown depict the dynamic range for cell concentration measurements on Cellometer Auto 2000. The concentration can be measured from 1 x 10^5 to 4 x 10^7 cells/mL without further dilution. The CV% at each concentration was below 15%. The data set was taken on a concentration series of primary mouse splenocytes.

Figure 2: Table of results for cell viability.

The results indicate the accuracy of the Cellometer Auto 2000 instrument in assessing the viability of Jurkat cells using trypan blue staining. Four measurements were performed for each sample. The viability average was calculated and plotted. The results show the reliability and accuracy of the Cellometer Auto 2000 in measuring cell concentration and viability of mammalian cells.
Features of the Cellometer Auto 2000

- Dual Fluorescence and bright field imaging: matching of both live and dead cells in heterogeneous samples
- All-in-One Design: Simple, space-saving design; robust instrument manufactured in the U.S.; no maintenance
- User-Friendly Touch Screen and Assay Selectors: Enhanced user experience, readable interface, intuitive software operation
- Fast Results: Obtain cell images, counts, size measurements, and viability calculations in 30 seconds
- Small Sample Size: Only 20 µl of sample
- Broad Dynamic Range: Measurable concentration range of 1 x 10^5 to 1 x 10^7 cells
- Pre-set assays and automated reports
- Differentiate cells based on size
- Eliminate debris from cell counts
- Count irregular-shaped cells
- Accurately count cells in clumps
- Export cell images for presentations and publications
- Verify cell morphology and counted live/dead cells
- 1 x 10^5 to 1 x 10^7 cells/mL using Nexcelom’s patent-pending
- Measurable concentration range
- Fast Results: 30 seconds
- Enhanced inter-operator reproducibility, minimal training, auto-save
- User-Friendly Touch Screen and Assay Selection: Simple, space-saving design; robust instrument manufactured in the U.S.; no maintenance
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- All-in-One Design: Simple, space-saving design; robust instrument manufactured in the U.S.; no maintenance
- Pattern Recognition Software: Accurately count cells in clumps
- Automated Data Management: Pre-set assays and automated reports
- Automated De-clustering function: Pre-set assays and automated reports
- Maintenance-free System: Disposable counting chambers – no wash steps
- No required instrument maintenance

Advantages of Cellometer Image Cytometry

- Cell Imaging: Verify cell morphology and counted live/dead cells
- Export cell images for presentations and publications
- Pattern Recognition Software: Accurately count cells in clumps
- Count irregular-shaped cells
- Cell Proliferation (CFSE): Accurately count cells in clumps
- Maintenance-free System: Disposable counting chambers – no wash steps
- No required instrument maintenance

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Optimized Analysis of Primary Cells

Cellometer Cell Counters, Cell Analysis Systems & Image Cytometry

Which Cellometer is Right for Me?

www.nexcelom.com/products

Cellometer CHT4-PD300 slides are required for cells greater than 80 µm in diameter.

FCS Express 4 license must be purchased in order to perform Cell Based Assay or Image Cytometry analysis.

* A messy sample is a heterogeneous sample containing unwanted cell types, such as red blood cells, in addition to the cells of interest.

** 1001146 Rev.C 05/15

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