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# Cellometer® Auto 2000 Cell Viability Counter
*for Primary Cell Analysis*




PBMCs
Stem Cells
Splenocytes
Monocytes
and Other Primary Cells

Nexcelom Bioscience

# 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 inter-operator reproducibility, 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

### 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

> *I like the Cellometer Auto 2000 because it eliminates manual counting and our counts are consistent between users. We count cells from primary samples and I like that the RBCs are not counted when we use the AO/PI stain. - Moffitt Cancer Center*

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

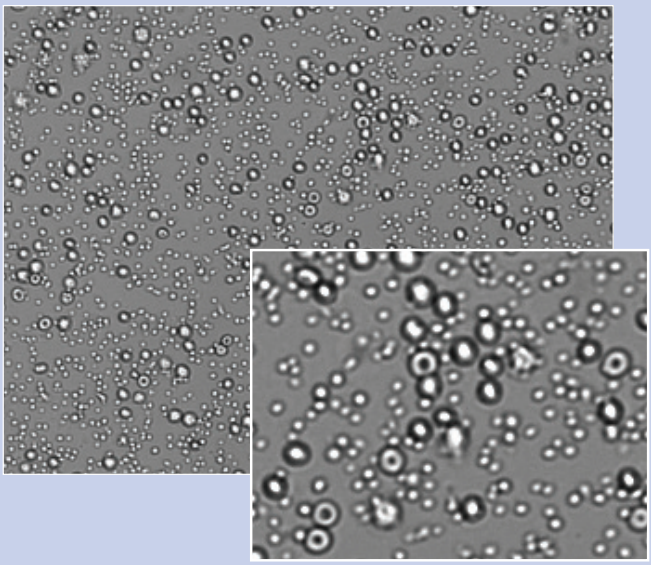
**On-Line Demonstrations** are completed in just 20 to 30 minutes and provide an overview of how Cellometer works using existing images of cells that interest you.

**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.**

Nexcelom Bioscience

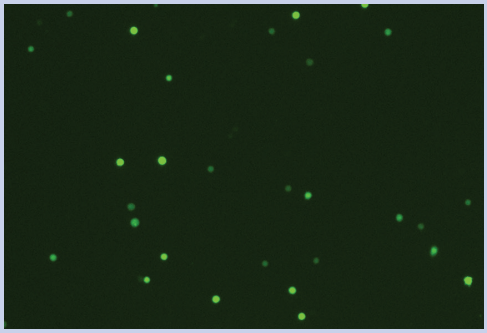


## Primary Cell Analysis

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 DNA, RNA, and siRNA transfection

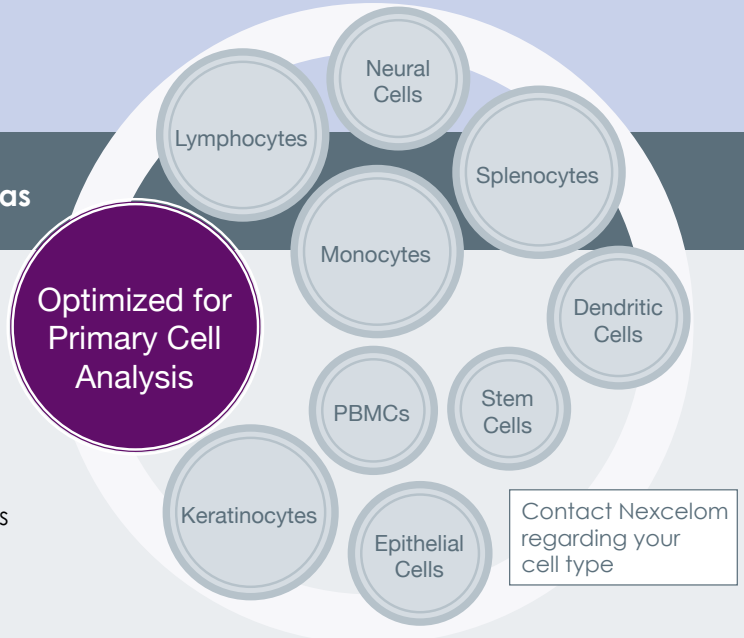
**Analysis of Clumpy & Irregular-Shaped Cells**
Nexcelom's exclusive pattern-recognition software enables accurate analysis of >98% of mammalian cell types

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

> *My colleague and I purchased a Cellometer Auto 2000 cell counter and we are using it now. It has facilitated our work greatly. We routinely process PBMCs from both fresh whole blood and from frozen stock. The Cellometer has made it much easier to get cell numbers and viability percentages for use in downstream applications such as IVS and Elispot.*
> *- Human Longevity, Inc*

## Proven Performance in Many Research Areas

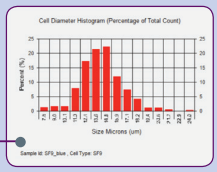
- **Clinical Immunology:** PBMCs
- **Regenerative Medicine:** Stem Cells
- **Transplantation:** Nucleated Cells
- **Vaccine Development:** Splenocytes
- **Oncology:** Cell Lines
- **Basic Research:** Primary Cells / Cell Lines



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

## FEATURES

- User-friendly Touch Screen
- Images for Data Verification
- Easily Edit and Import Assays
- Cell Size Histograms

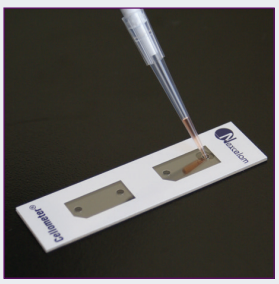





- Analysis of Multiple Species of Stem Cells
- GFP Transfection Efficiency and % Viability
- Primary Splenocyte Concentration & Viability
- Accurate PBMC Counts in the Presence of Red Blood Cells
- Total Nucleated Cell Count & Viability
- One-Step Cell Concentration & Viability

## ASSAYS

## How It Works



Pipette 20µl



Insert Counting Chamber



Select Assay & Click Count

**Assay: Immune cells, high RBC**

Sample ID: Blood_AOPI_4-2
Dilution Factor: 2.00

| Count | Concentration |
|---|---|
| Total: 340 cells | 1.18x10^6 cells/mL |
| Live: 324 cells | 1.12x10^6 cells/mL |
| Dead: 16 cells | 5.53x10^4 cells/mL |

Mean Diameter
7.1 microns
7.1 microns
6.4 microns

**Viability: 95.3%**

Get Results

## Dual-Fluorescence for Primary Cell Viability in Heterogeneous Samples

Live / Dead Cell Concentration using AO / PI

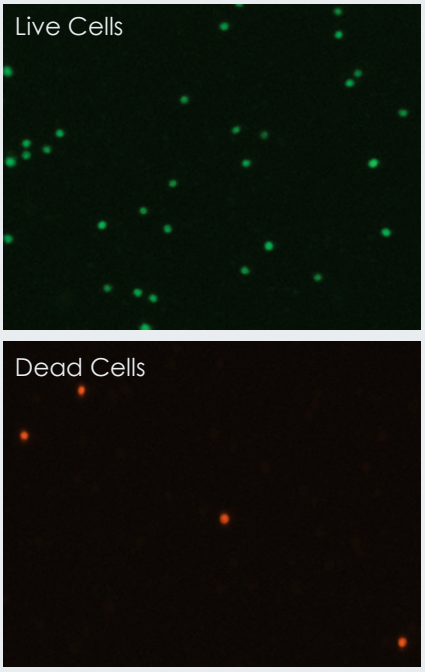
**Why isn't trypan blue recommended for viability analysis of primary cells?**

Trypan blue dye enters and stains all cells with a compromised membrane, including both nucleated and non-nucleated cells, such as red blood cells. For the most accurate calculation of nucleated cell viability, fluorescent nuclear staining dyes are required.

**Dual-Fluorescence Viability**, using acridine orange (AO) and propidium iodide (PI), is the recommended method for accurate viability analysis of primary cells, such as PBMCs, splenocytes, and stem cells, in samples containing debris and unwanted non-nucleated cell types including red blood cells.

Acridine orange (AO) and propidium iodide (PI) are nuclear staining (nucleic acid binding) dyes. AO is permeable to both live and dead cells and stains all nucleated cells to generate green fluorescence. PI enters dead cells with compromised membranes and stains all dead nucleated cells to generate red fluorescence.

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.




## Performance of the Cellometer Auto 2000 Cell Viability Counter

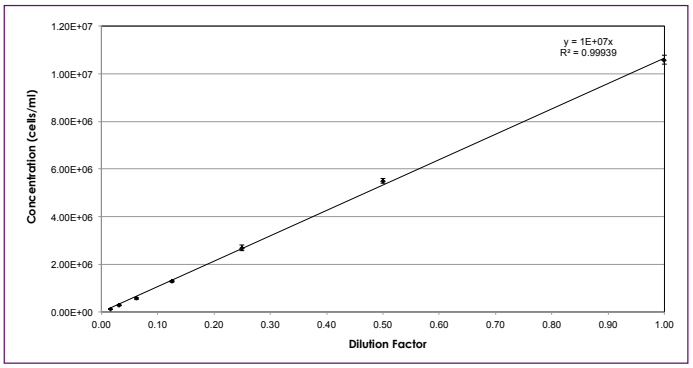



*Figure 1: Table of results for cell concentration.*

Data shown depicts the dynamic range for cell concentration measurements on Cellometer Auto 2000. The concentration can be measured from 1 x $10^5$ - 1 x $10^7$ cells / mL without further dilution.

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

| 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 | 3.27E+06 | 57.5 | 7% | 7% |

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

The results indicate the accuracy of the Cellometer Auto 2000 instrument in assessing the viability of Jurkat cells using PI for cell viability. 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.

> *The Cellometer Auto 2000 system has greatly simplified the way my company does cell counting and has become a very essential piece of equipment. We use it for both high and low RBC cell counting for viability purposes to accurately culture large volumes of cells. It has cut down on the amount of time we take to do cell counts and allows us to complete our processes in a very timely fashion. Truly a great product!*
> *- Cognate BioServices, Inc.*

**Cellometer Cell Counters, Cell Analysis Systems & Image Cytometry**
Nexcelom offers a wide range of Cellometer systems developed and optimized for specific applications and cell types.



www.nexcelom.com/products

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www.nexcelom.com

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Email: info@nexcelom.com
Phone: 978.327.5340
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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 | Vision CBA | Vision CBA (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 | | | | | | |
| Image Cytometry** | | | | | | | | X | X | | X | X |

** A messy sample is a heterogeneous sample containing unwanted cell types, such as red blood cells, in addition to the cells of interest.*
*** FCS Express license must be purchased in order to perform Cell Based Assay or Image Cytometry analysis*
**** Cellometer CHT4-PD300 slides are required for cells greater than 80µm in diameter*


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