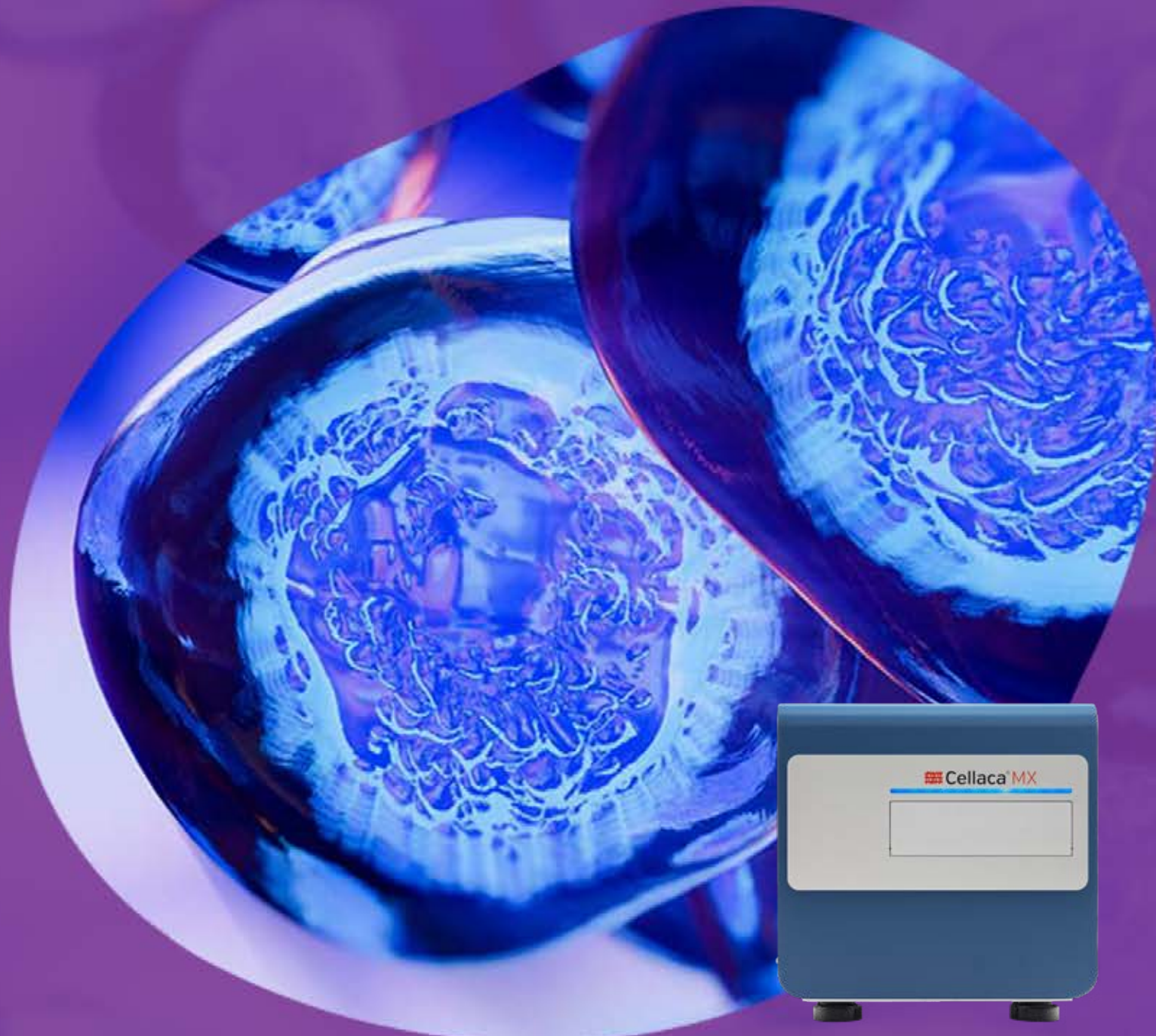


More  
productivity  
in less time.

revvity



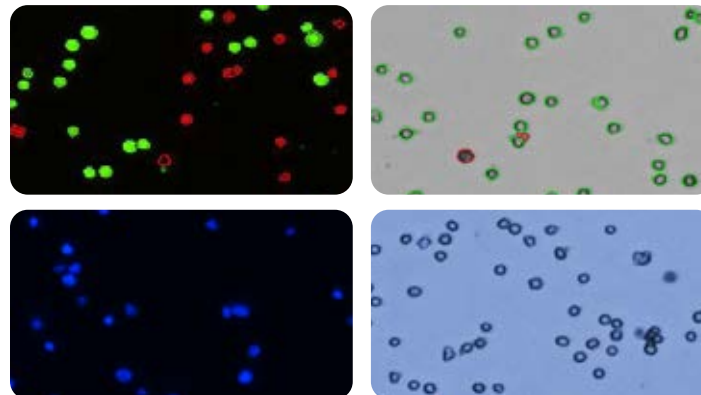
Cellaca® MX high-throughput cell counter

# Count 24 samples in less than 3 minutes



Your workflow will be streamlined and more efficient when you integrate the Cellaca MX high-throughput cell counter with these capabilities:

- **Batch samples** - run up to 24 samples at a time
- **Small sample volume** - only 25  $\mu$ l of cell sample required
- **Autofocus** - fast autofocus prior to analysis
- **Cell based assays** - data output at a single cell level enables you to do cell-based assays such as apoptosis, cell cycle, protein expression (including GFP and RFP), and reactive oxygen species (ROS)
- **Multiple configurations** - choose to add up to five fluorescent filters
- **Automation ready** - robotic integration ability with optional API
- **Customizable reports** - add graphs, images, charts, and tables
- **Multi-language support** - over 7,000 languages available
- **21 CFR part 11 ready** - optional add-on that includes audit trail, user access control, and digital signature

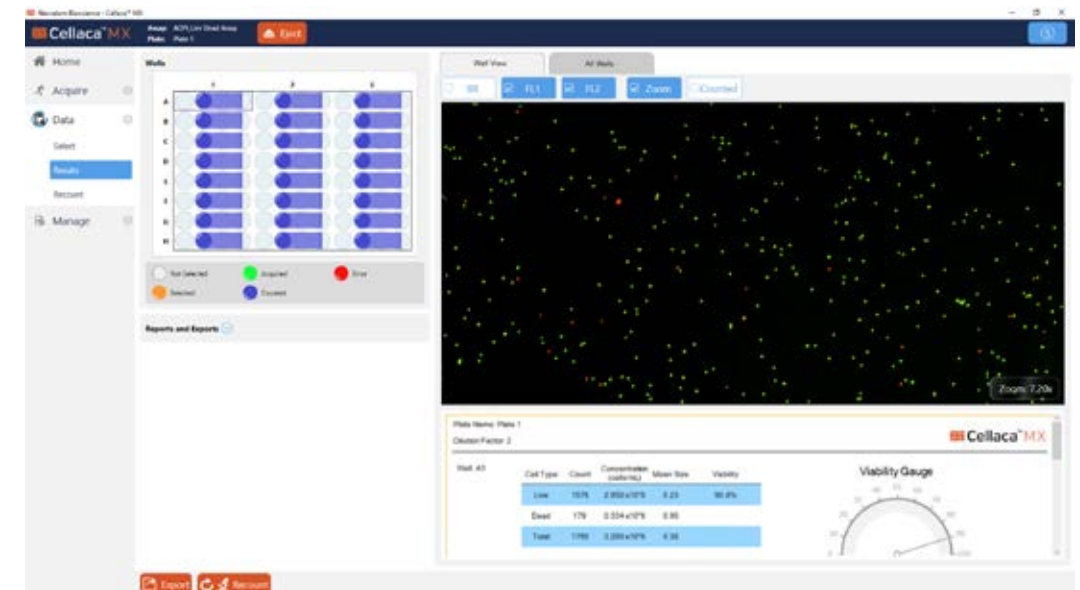




# You don't have to limit your experimental design

Run 24 samples in less than 3 minutes! No more reloading of individual slides or waiting for small batch counters to finish counting. With the Cellaca MX high-throughput cell counter your experiments are no longer limited by the number of samples you can quickly and accurately count.

Multiple fluorescent filter options enable you to perform additional cell-based assays in minutes and with the ViaStain™ Cell Fitness Panel you can get a quick check of viability, vitality, apoptosis and reactive oxygen species (ROS).



The screenshot shows the Cellaca MX software interface. On the left is a navigation menu with options: Home, Acquire, Data, Select, Results, Recount, and Manage. The main area is divided into three sections: a well plate grid, a large image view, and a data summary table. Callouts point to specific features: 'Select a well to view an image and results' points to a well in the grid; 'Select multiple channels to view image in a single overlay' points to the 'F1', 'F2', and 'Zoom' buttons; 'Choose the "All Wells" tab to see data from all 24 samples' points to the 'All Wells' tab; 'Export data in variety of file types and formats, including customizable reports' points to the 'Export' button; 'Overview of key results' points to the data table; and 'Quick visual assessment of viability' points to the 'Viability Gauge'.

**Well Plate Grid:**

Well	1	2	3
A			
B			
C			
D			
E			
F			
G			
H			

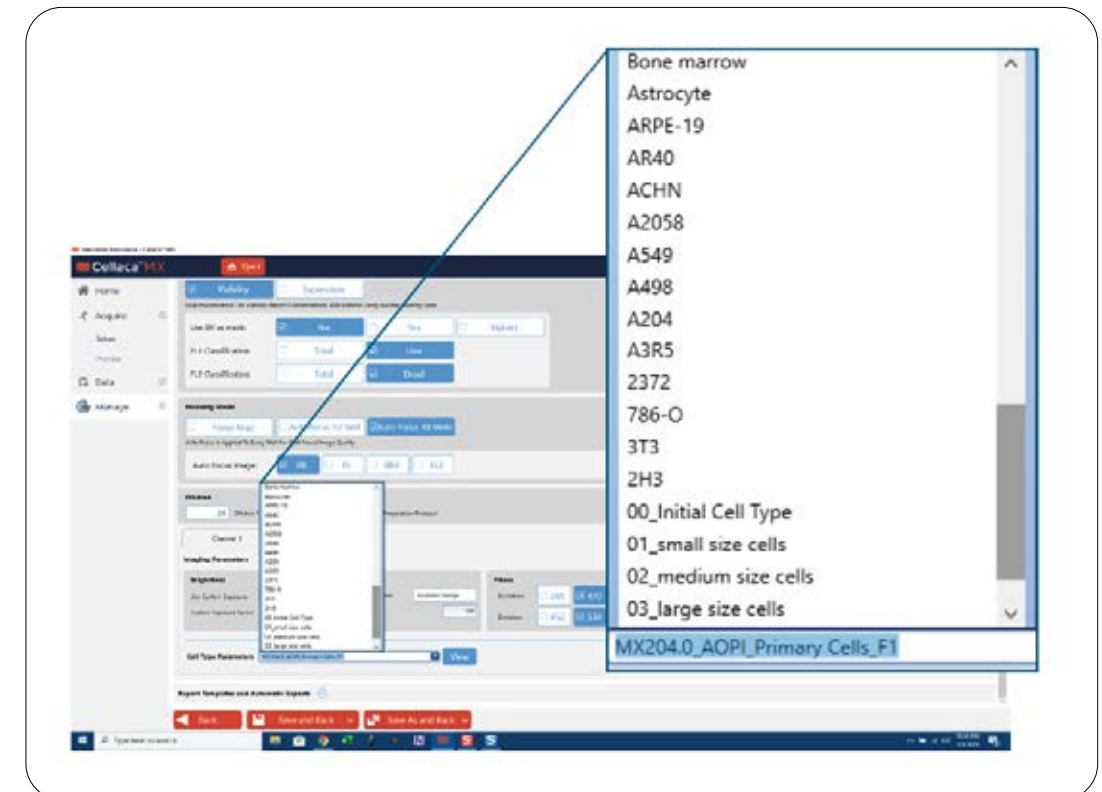
**Data Summary Table:**

Cell Type	Count	Concentration (cells/mL)	Mean Size	Viability
Live	1576	2.950 x 10 <sup>5</sup>	8.23	90.8%
Dead	179	0.334 x 10 <sup>5</sup>	8.95	
<b>Total</b>	<b>1755</b>	<b>3.284 x 10<sup>5</sup></b>	<b>8.38</b>	



## Ready to use assay settings and cell type parameters

With the Cellaca MX you can build your own assays or choose from the many assays already included in the software. In addition, there are over 200 cell types preloaded with optimized settings. Simply find your assay and cell type in the menu and you are ready to count.





# Save time with simultaneous imaging and analysis

As soon as the first well has been acquired you can begin reviewing the images and data. No need to wait until the entire batch has been analyzed before starting to assess the results. Answers are available in seconds, not minutes.

The ability to add additional automation with robotic integration can further increase productivity.



Wells in blue have been captured and analyzed. The green well is in the process of being analyzed. The orange well is next to be analyzed. Well A1 is selected and the AO/PI image is displayed on screen (AO is green, PI is red). The report shows the number of live, dead and total cells counted for well A1.

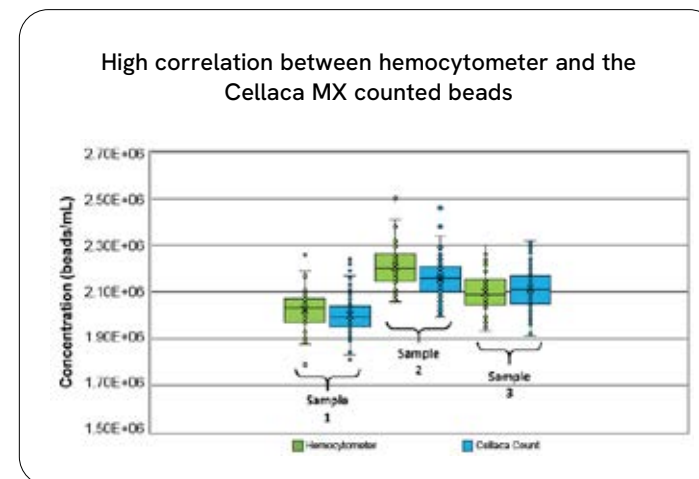


# Accurate results you can trust

The Cellaca MX high-throughput cell counter has undergone rigorous testing and validation to ensure accurate results. In comparison to manual counting with a hemocytometer and automated counting with a Cellometer® system, the Cellaca MX proves to be a very accurate instrument. In addition, the Cellaca MX counter can warn the operator when the cell count is out of range (too few or too many cells in the sample) and will suggest a corrective course of action (concentrating or diluting the cell sample and by how much).

## Close correlation to hemocytometer

In this study, three tubes of 5-micron polystyrene beads were diluted to a concentration of  $\sim 2 \times 10^6$  beads/mL. To determine the concentration within each tube, 40 individual hemocytometer counts were performed for each tube. The Cellaca MX counter was then used to measure the concentration on the same set of tubes. The results show a very close correlation between the hemocytometer counted beads and the Cellaca MX counts.



CHO cells stained with Trypan blue were shown to have a CV of 6% or less over 4 independent experiments totaling 83, 24-well plates (1,992 samples).

The measured concentration difference between the Cellaca MX and the hemocytometer bead counts were between 0.7 - 2.3%.

	Hemo CV	Cellaca CV	Hemo Average	Cellaca Average	% Difference
Tube 1	4.46%	3.69%	2.03E+06	2.00E+06	1.20%
Tube 2	4.33%	3.64%	2.21E+06	2.16E+06	2.35%
Tube 3	4.28%	3.94%	2.10E+06	2.11E+06	0.71%



# Accurate results you can trust

## Low plate-to-plate variability

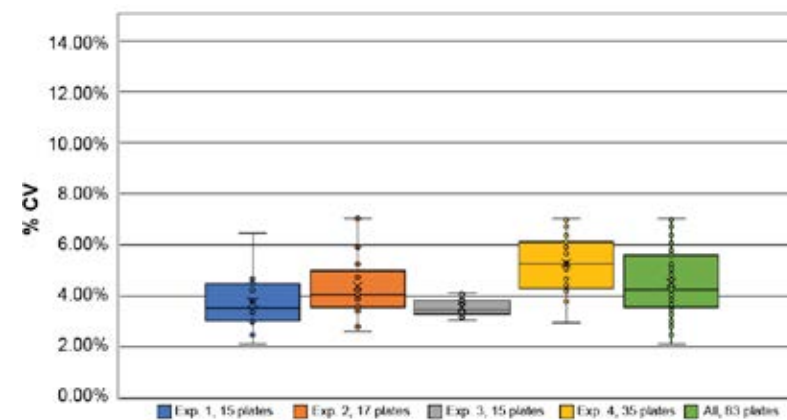
Cellaca MX plates are made to exacting standards. This ensures accurate cell counts you can trust across manufacturing lots of Cellaca plates.

In a study of 1,992 individually loaded samples (83 plates) by multiple users over multiple weeks a count of  $\sim 2 \times 10^6$  cells/mL CHO-s cells with Trypan Blue yielded a CV less than 6%. The cumulative counting time for all 83 plates was 70 minutes.

“After testing this cell counter and comparing it to other counting methods, we have seen that the Cellaca MX produces tighter/accurate counts and saves us time.”

- Kimberly Sandy, Pfizer

## An average CV of < 6% achieved over multiple experiments using Trypan blue stained CHO cells



CHO cells stained with Trypan blue were shown to have a CV of 6% or less over 4 independent experiments totaling 83 x 24-well plates (1,992 samples).

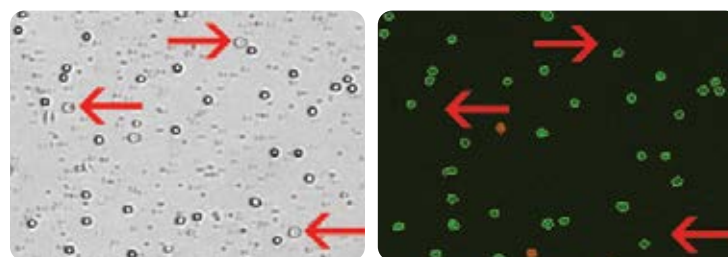


# Consistent viability measurement using fluorescence

Count messy samples more accurately with fluorescence! With the Cellaca MX you can eliminate red blood cells, platelets and debris from your counts using fluorescent nuclear stains. Acridine orange and propidium iodide are perfect for counting the nucleated cells in samples like PBMCs, patient samples, tumor digests and samples with lots of debris.

## The advantage of fluorescent counting for primary cells

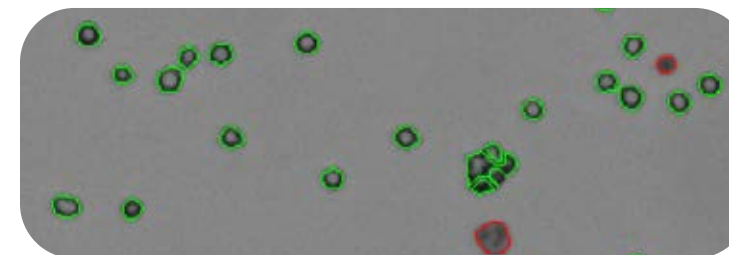
The images (below) demonstrate the advantage of fluorescent counting for primary cells. The brightfield image shows the combination of nucleated cells, red blood cells and platelets present in the sample. Only the live and dead nucleated cells are visualized and counted in the green and red fluorescent channels.



Several red blood cells are indicated in the brightfield image (above, left). The red blood cells are not visible in the fluorescent image (above, right) detecting cells stained with nuclear staining dye.

## Count clumpy cells using declustering algorithm

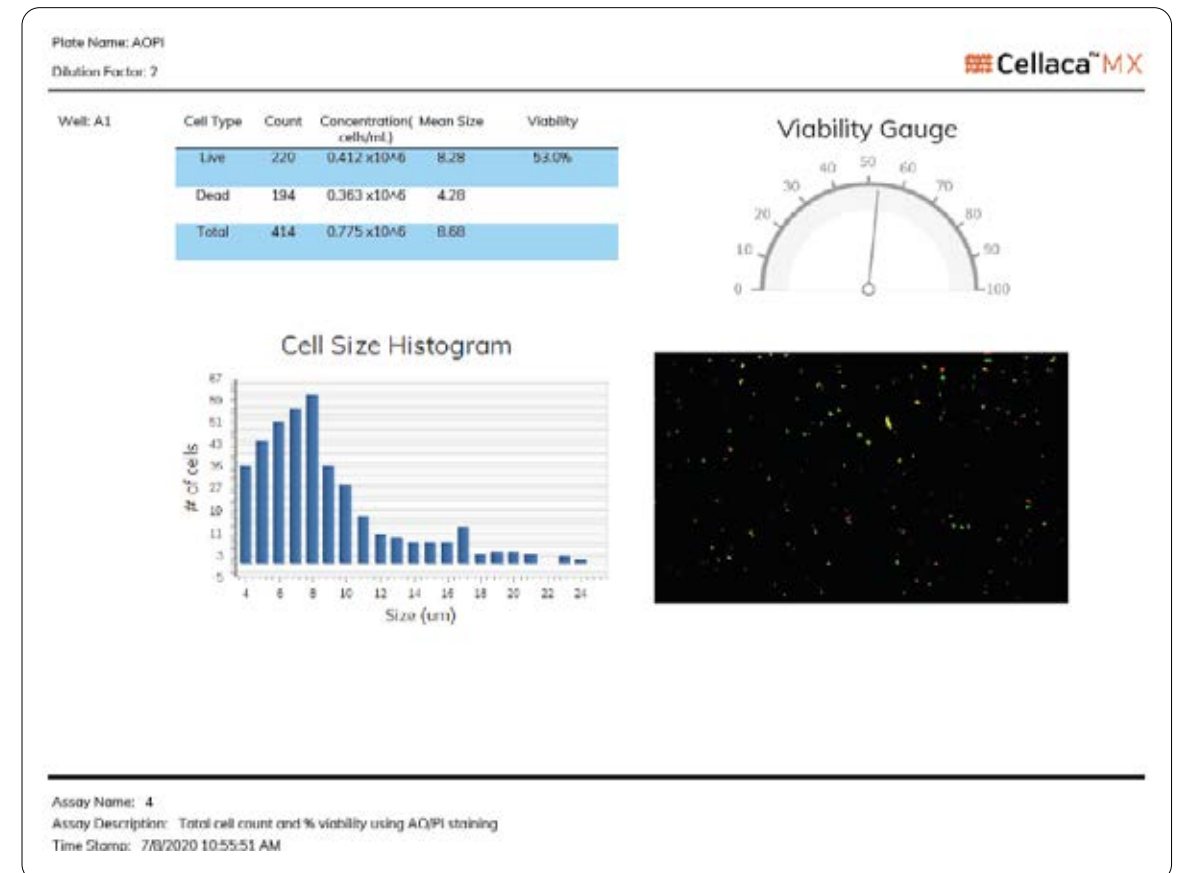
When working with clumpy cells you can apply declustering settings to identify and individually count each cell in your sample to get highly accurate counts.



Cells counted with Trypan blue on the Cellaca MX. The software automatically declusters and counts individual live cells (in green outlines) and Trypan blue positive dead cells (in red).

# Customizable reports

Export reports as CSV, Excel, Word, or PDF files. Use default reports or customize based on the data and images you want included for the assay that was run. Statistical analysis can be included for various parameters. Different languages are available for reporting.



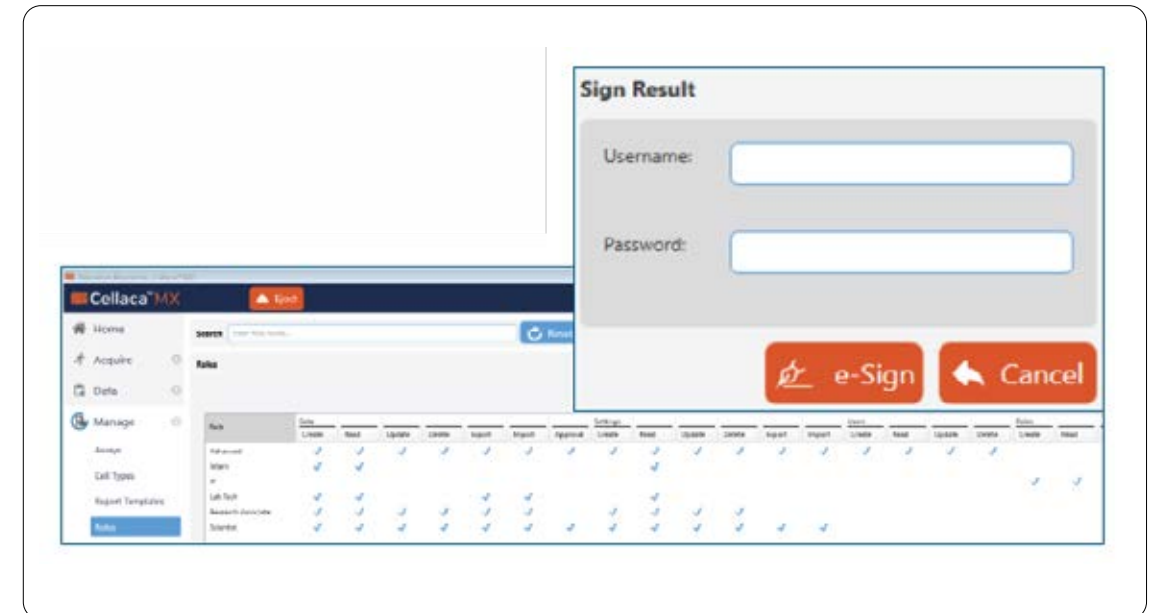
The above image shows cells counted with Trypan blue on the Cellaca MX. The software automatically declusters and counts individual live cells (in green outlines) and Trypan blue positive dead cells (in red).



## Facilitates 21 CFR Part 11 compliance

An optional module can be purchased to meet the FDA requirements for 21 CFR Part 11. The additional module comes with the following features:

- User login with passwords
- User assigned permissions
- Audit trail
- Error log files
- Electronic signatures



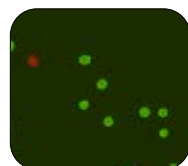
Different user roles can be assigned in 21 CFR Part 11 module. An electronic signature can be applied to the results.



# ViaStain Cell Fitness Panel on the Cellaca MX Counter

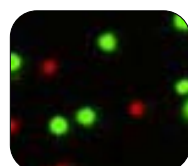
There are many parameters that can indicate the fitness of your samples but this is the first time that these parameters have been combined into a single kit to allow you to better examine samples of interest. These individual tests provide potential insight into sample quality. These tests can be run on the Cellaca MX FL2 or FL5.

The ViaStain Cell Fitness Panel includes the following tests:



#### **Viability – AO/PI (Acridine Orange and Propidium Iodide) -**

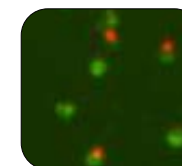
Using AO/PI allows for the identification, enumeration of mononuclear cells, and provides cell viability in the counted sample without a RBC lysing step.



**Vitality/Enzymatic Activity – Calcein AM/PI** - By looking at the conversion of non-fluorescent Calcein AM to green fluorescent calcein we can measure the number and concentration of both metabolically active live cells as well as non-viable cells in a given population.

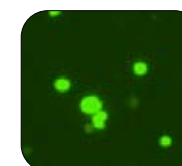


**Reactive Oxygen Species – Total ROS** - While reactive oxygen species (ROS) are natural by-products of normal metabolism, during oxidative stress-related events, the accumulation of ROS can result in significant damage to cell structures. Cultures that are positive for ROS may signal unhealthy culture conditions that can lead to apoptosis and cell death.



#### **Mid-Stage Apoptosis – Annexin V/PI -**

An assay commonly carried out by researchers interested in performing functional assays to measure the percent of live, apoptotic, and necrotic cells in a sample. May serve as an early indicator of an unhealthy cell population.



#### **Late-Stage Apoptosis – Caspase 3/7 -**

Early or mid-stage apoptotic cells may recover or may progress to late stage apoptosis. A cell culture with a high number of caspase 3/7 positive cells may be in trouble. In this assay the executioner caspase is detected as a bright nuclear signal.



# A Cellaca instrument for every analysis

The Cellaca instrument line comprises the Cellaca MX high-throughput cell counter, with brightfield and two fluorescent channels, and the Cellaca PLX image cytometry system, with brightfield and five fluorescent channels, for highly accurate multichannel analysis.

	Cellaca MX AOPI	Cellaca PLX
Channels	Brightfield, green, red	Brightfield, Blue, Green, Orange, Red, Far Red
Number of fluorescent channels	3 (2 per scan)	13 (6 per scan)
Excitation LED	470 nm, 527 nm	370 nm, 475 nm, 531 nm, 628 nm
Emissions filters	534 nm, 655 nm	452 nm, 534 nm, 605 nm, 655 nm, 692 nm
Commonly used compatible dyes and assays	Trypan Blue, AO/PI, Calcein AM, Annexin V, Caspase 3/7	Trypan Blue, AO/PI, Hoechst, DAPI, GFP, RFP, CMFDA, Calcein AM, 7AAD, Annexin V, PE, APC, *KIRAVIA Blue™ 520
Counting speed	Trypan Blue - 2 seconds Fluorescence 2-channel scan - less than eight seconds (per well)	Fluorescence 4-channel scan in 1 minute (per plate)
Volume	50 µL - 200 µL in counting plates	15 pL in slides 50 µL - 200 µL in counting
Size/Diameter range	5 µm - 80 µm	5 µm - 80 µm
Concentration range	1x10 <sup>5</sup> x 1x10 <sup>7</sup> cell/mL	1x10 <sup>5</sup> x 1x10 <sup>7</sup> cell/mL
Fluorescence upgradeable	Yes (add additional colors)	N/A
IQ/OQ Option	Yes	Yes
21 CFR Part 11 ready option	Yes	Yes
Automation compatible	Yes	Yes
Operating system	Windows 10	Windows 10
Dimensions	13 in x 13 in x 16 in (33 cm x 33 cm x 41 cm)	13 in x 13 in x 16 in (33 cm x 33 cm x 41 cm)
Weight	42 lbs (19 kg)	42 lbs (19 kg)



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Revvity, Inc.  
940 Winter Street  
Waltham, MA 02451 USA  
[www.revivity.com](http://www.revivity.com)

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