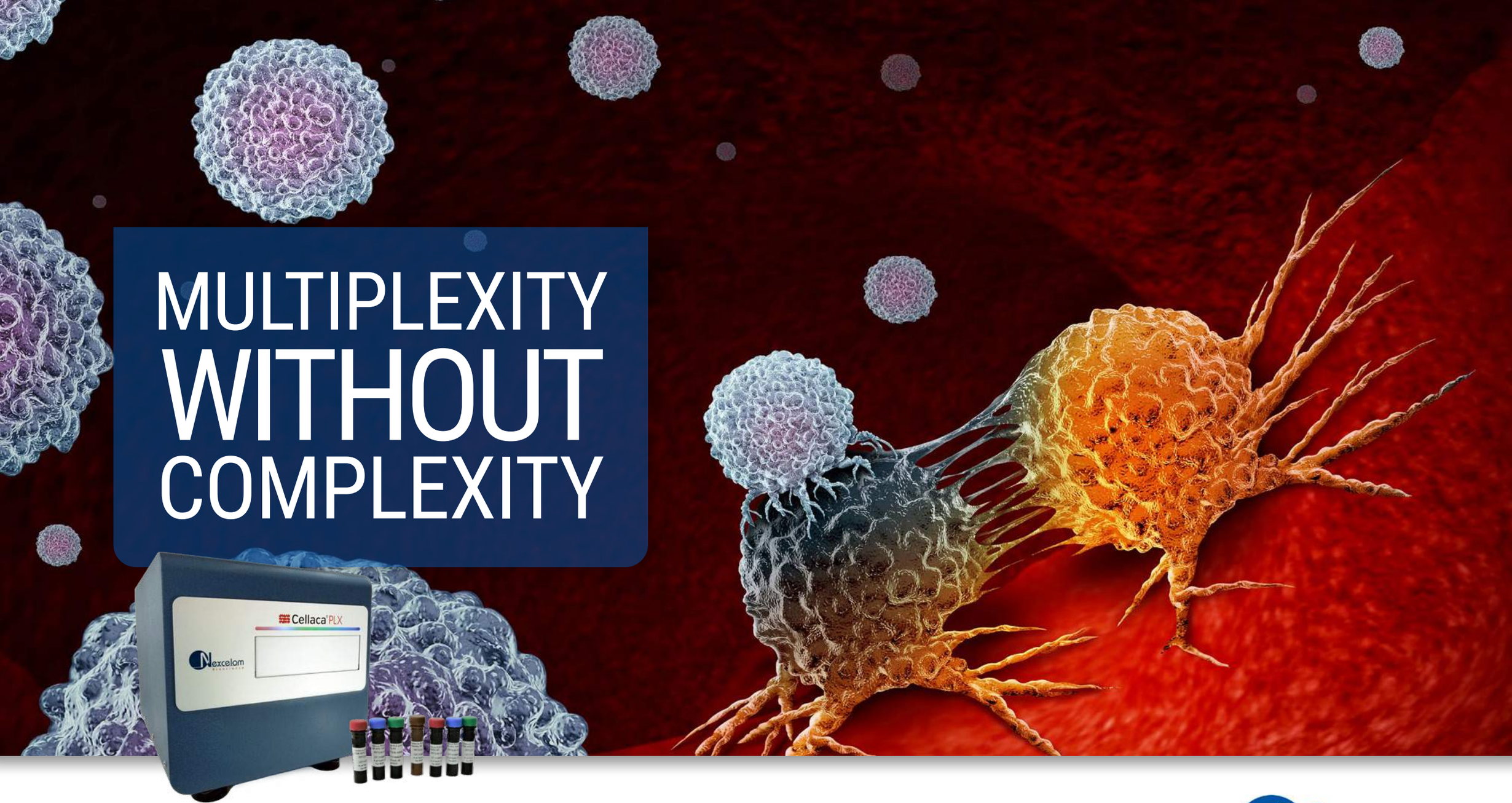
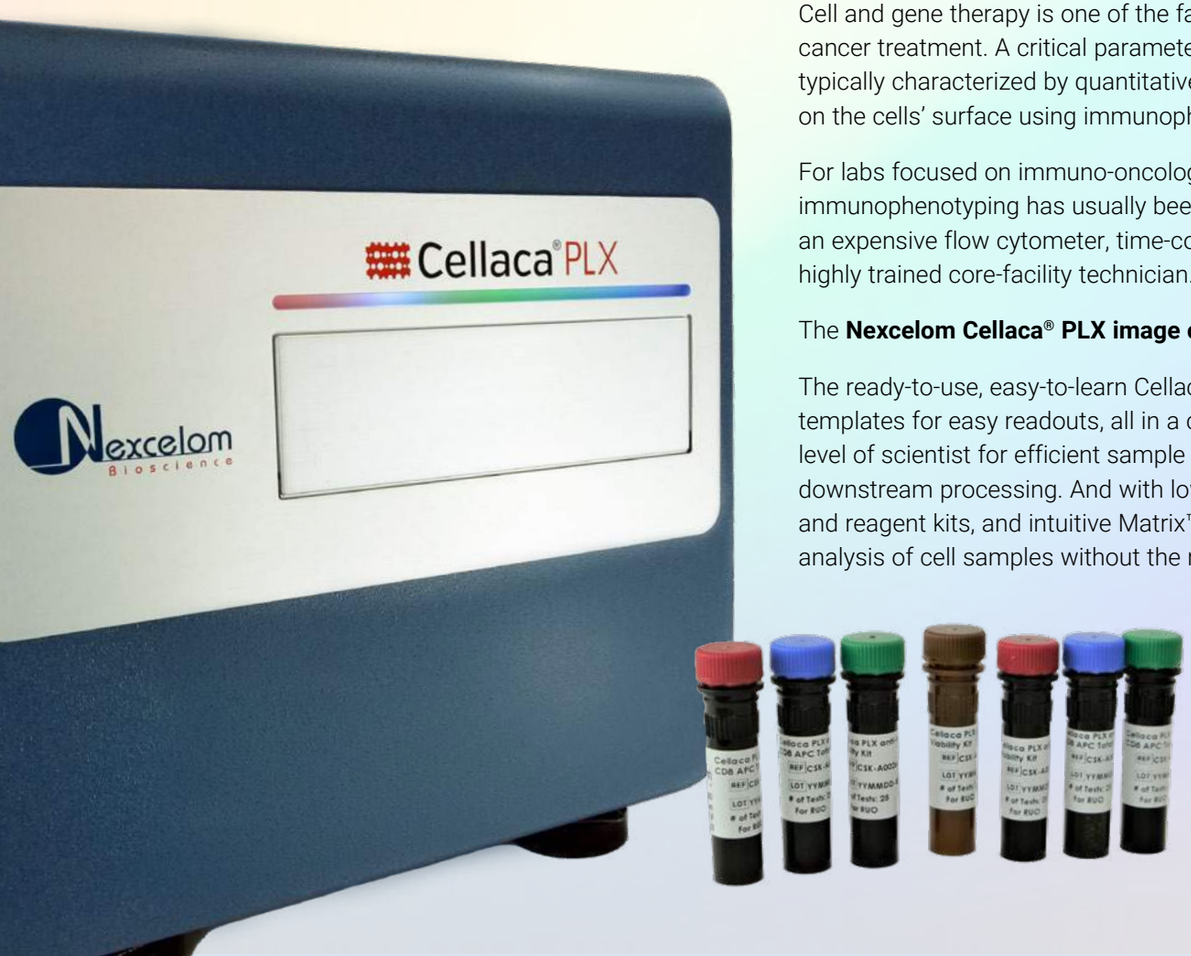
MULTIPLEXITY WITHOUT COMPLEXITY



Cellaca® PLX Image Cytometry System

Nexcelom
From PerkinElmer

A Whole New Approach to Immunophenotyping, Cell Counts, and Viability Readouts



Cell and gene therapy is one of the fastest growing fields of research, especially for cancer treatment. A critical parameter that cell therapy researchers assess is cell identity, typically characterized by quantitatively determining and distinguishing antigen receptors on the cells' surface using immunophenotyping.

For labs focused on immuno-oncology, cell therapy, and CAR T-cell manufacturing, immunophenotyping has usually been performed using flow cytometry, which requires an expensive flow cytometer, time-consuming sample prep and runtimes – and often a highly trained core-facility technician.

The **Nexcelom Cellaca® PLX image cytometry system** changes all that.

The ready-to-use, easy-to-learn Cellaca PLX delivers predetermined assays and analysis templates for easy readouts, all in a compact benchtop footprint. It's adoptable by any level of scientist for efficient sample evaluation, while shortening the time to move to downstream processing. And with low fluorescence consumables, fluorescent antibodies and reagent kits, and intuitive Matrix™ software, the Cellaca PLX provides accurate analysis of cell samples without the need for flow cytometry.

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Go with the Workflow

The multiplexing capabilities of the Cellaca PLX produces multichannel imaging while simultaneously performing high-quality cell counts, concentrations, size measurements, and viability with either apoptosis detection or surface marker analysis - and without complex processes, liquid waste handling, clogging, or the need for extensive training.

The Cellaca PLX is easy to use, with simple relevant protocols; intuitive, compliance-ready software; and preloaded templates, making it the perfect tool for gathering expert-level cell analysis for a multitude of phenotypic cell data – in a fraction of the time compared to traditional methods.

1 Sample Prep
Perform easy sample prep using the provided protocols

2 Stain
Stain using titrated validated reagents

3 Image
Image using predefined multichannel assays

4 Export
Export to data analysis software automatically

5 Analyze
Analyze data using preexisting templates

REAGENTS

INSTRUMENT

SOFTWARE

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Think Inside the Box

The Cellaca PLX system's ability to consistently image, decluster, and report cell counts, viability, concentration, and phenotype data underscores the instrument's versatility. You can:

- Shorten the time to downstream processing by multiplexing with multiple channels
- Obtain critical cell count and viability readouts at less than 30 seconds per sample with no warmup time
- Easily view and analyze cell population data as a histogram, scatter plot, dot plot, or contour plot
- Quickly perform cell purity checks at the bench, then continue with downstream assays without waiting for a flow cytometer

TECNHOLOGY

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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.

The Cellaca PLX is the only multichannel analysis instrument enabling high-throughput cell count, concentration, immunophenotyping, and viability readouts to significantly improve the time to downstream processing.

Cellaca MX and Cellaca PLX: The Choice Is Yours

	Cellaca PLX	Cellaca MX FL2
Channels	Brightfield, Blue, Green, Orange, Red, Far Red	Brightfield, Green, Red
Number of Fluorescent Channels	13 (6 per scan)	3 (2 per scan)
Excitation LED	370 nm, 475 nm, 531 nm, 628 nm	470 nm, 527 nm
Emission Filters	452 nm, 534 nm, 605 nm, 655 nm, 692 nm	534 nm, 655 nm
Commonly Used Compatible Dyes and Assays	Trypan Blue, AO/PI, Hoechst, DAPI, GFP, RFP, CMFDA, Calcein AM, 7AAD, Annexin V, PE, APC, KIRAVIA Blue 520™*	Trypan Blue, AO/PI, Calcein AM, Annexin V, Caspase 3/7
Counting Speed	Fluorescence 4-channel scan in less than 1 minute (per plate)	Trypan Blue - 2 seconds Fluorescence 2-channel scan - less than eight seconds (per well)
Volume	15 µL in slides 50 µL – 200 µL in counting plates	50 µL – 200 µL in counting plates
Size/Diameter Range	5 µm – 80 µm	5 µm – 80 µm
Concentration Range	$1x10^5$ - $1x10^7$ cell/mL	$1x10^5$ - $1x10^7$ cell/mL
IQ/OQ Option	Yes	Yes
21 CFR Part 11	Yes	Yes

*KIRAVIA Blue 520™ is a trademark of Sony. This product is subject to proprietary rights of Sony and is made and sold under license from Sony Corporation.

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Reagents Make the Solution

The fluorescent labelled antibodies and stains in the Cellaca PLX kits are optimized for ease of use. The predefined assays and templates, together with the ready-to-use reagent kits, enable flow-cytometry-like data analysis with no need for titrations, extra incubations, washes, or decontamination. These features permit researchers to rapidly move processed samples to downstream applications while preserving sample integrity.

With the Cellaca PLX platform, you can:

- Quickly perform CD3, CD4, and CD8 surface marker detection, cell viability, and cell concentration in a single assay
- Stain transfected cell lines with viability dyes to determine percentage of GFP or RFP cells that are live/dead
- Perform routine viability measurements and apoptosis functional assays to determine cell health

Available assay kits include:

- Immune cell phenotyping
- Apoptosis detection
- Cell viability
- Fluorescent protein analysis

Plus, Cellaca PLX disposable consumables (slides and plates) provide a safe, self-contained sample environment with no decontamination required between runs.

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Software That Makes Multiplexing Easy

Stress-free Cellaca PLX software comes with preloaded, step-by-step templates and methodologies to streamline multiplex analysis, providing a benchtop solution for quick, accurate measurements of cell counts and concentrations, surface marker staining, viability, and apoptosis. And you get customizable results for presentations, too.

Expert Support for Assay Development

Onsite, remote, and hybrid training are available to assist with initial setup and continued assay support for improved workflows.

Remote and Field Serviceability

Calibration-free instrumentation with minimal to no routine maintenance. No clogging or liquid waste stream.

21 CFR Part 11 Compliant

For regulated environments, the Cellaca PLX system's secure software delivers:

- Audit trails, time stamping, user access control, and electronic signatures
- File locking and change tracking
- Creation of new customizable defined roles with multiple configurations available
- A closed-loop database system to aid with data integrity and security

Multilanguage Support

Offering over 7,000 language settings for easy global data transfer.

Automation Ready

Compatible with robotic integration and automated liquid handling systems.

Stress-Free, Intuitive Software

- Built-in assays with optimized settings for over 400 individual cell types
- Customizable data and calculation reports with graphs, images, charts, and tables for ease of information sharing

The multi-color results image provides a visual of the various overlayed channels differentiating the cells while the cell count and viability data are captured below.

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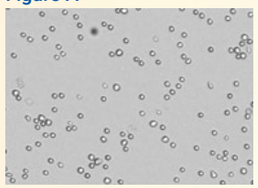
More Ways to Multiplex

Immunophenotyping

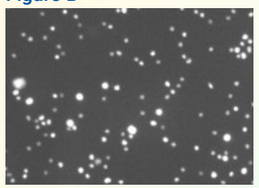
Routine CD3, CD4, and CD8 population analysis is a standard practice in cell and gene therapy research. Understanding specific cell populations and viability allows researchers to move tested samples to subsequent downstream applications.

Figure A



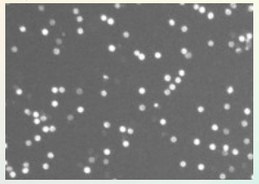
Brightfield

Figure B



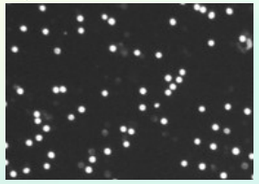
Hoechst

Figure C



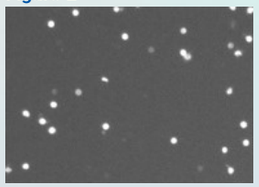
CD3-KIRAVIA Blue 520™

Figure D



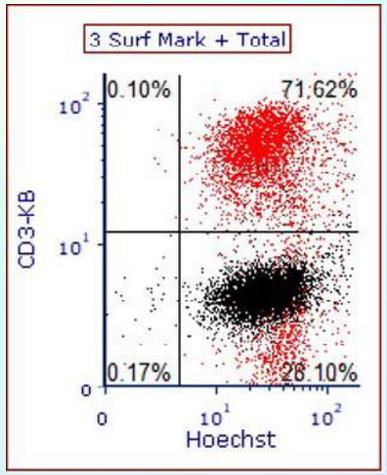
CD4-PE

Figure E



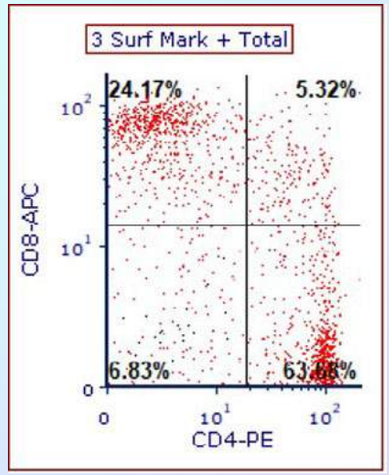
CD8-APC

Figure F



Hoechst+, CD3+

Figure G



CD4+, CD8+

Surface marker stained PBMC sample: *PBMCs were stained with CD3, CD4, and CD8 surface markers, along with the total dye Hoechst. Image data (A-E) from the Cellaca PLX was exported to FCS Express™ software for analysis. Gated nucleated (Hoechst +) CD3+ cells (~70% of total cells) are shown in the first scatter plot (F). The CD3+ population was then further gated for CD4+ (~63%) and CD8+ (~24%) cells (G).*

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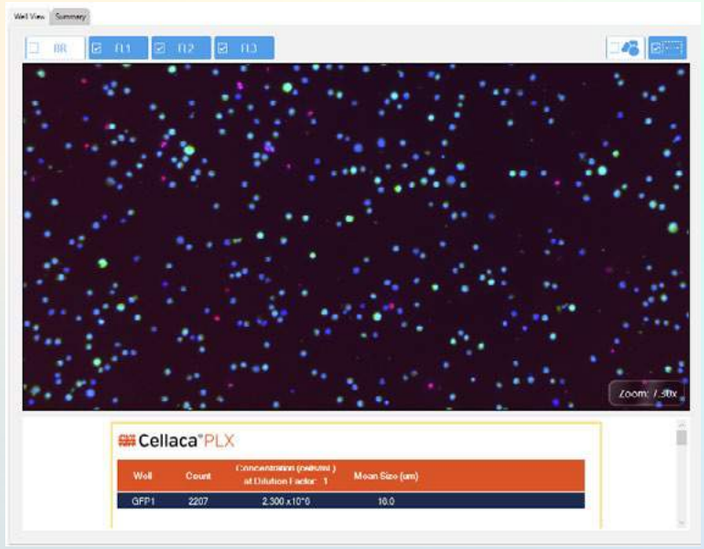
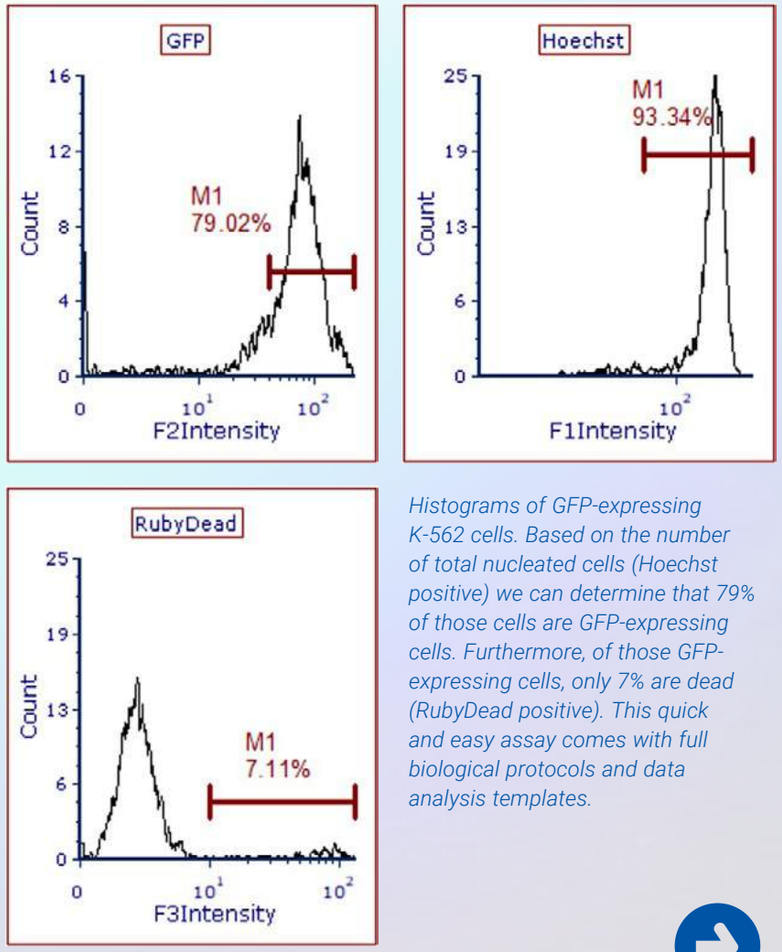
More Ways to Multiplex

Fluorescent Protein Expression

Transduction and transfection assays are performed not only in cell and gene therapy but also in cell line development, viral vaccines, and multiple other areas of research. Quantifying the expression of fluorescent proteins, such as GFP and RFP, and the viability of those cells, is essential in determining whether gene insertion was successful.



This micrograph from Matrix™ software shows a merged image of GPF-positive cells stained with RubyDead, a cell viability dye, and counterstained with Hoechst for identification of total nucleated cells.



Histograms of GFP-expressing K-562 cells. Based on the number of total nucleated cells (Hoechst positive) we can determine that 79% of those cells are GFP-expressing cells. Furthermore, of those GFP-expressing cells, only 7% are dead (RubyDead positive). This quick and easy assay comes with full biological protocols and data analysis templates.

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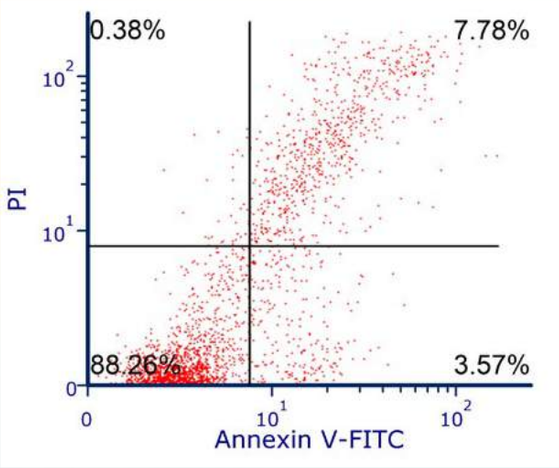
More Ways to Multiplex

Apoptosis

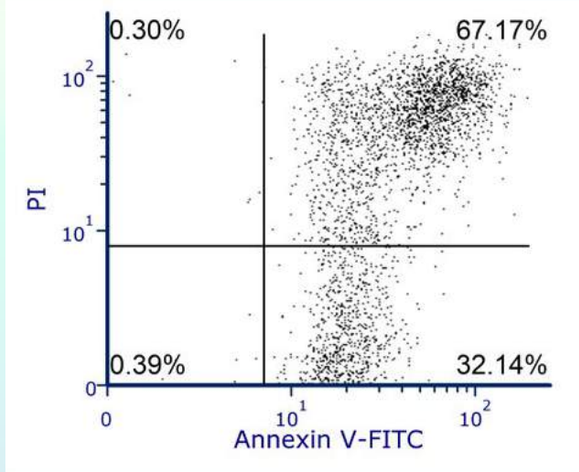
Apoptosis, viability, and other cell health indicators are vital in examining the state of collected patient samples. When viability drops below a set benchmark, further investigation is warranted in assessing the cause of cell decline. Caspase and annexin V are typical apoptosis markers used to measure cell health.

Untreated Jurkat Cells



Exported image data in this scatterplot displays Jurkat cells stained with annexin V-FITC and propidium iodide. Healthy annexin V and PI negative cells (88%) are in the left bottom quadrant.

Drug-Treated Jurkat Cells



Jurkat cells were treated with staurosporine (STS), imaged on the Cellaca PLX, and data exported into FCS Express™ software. Compared to the healthy control (data in red on Untreated Jurkat Cells scatterplot), there was a significant increase in annexin V positive cells from 3.5% to 32%. The number of double positive cells for annexin V and PI also drastically increased from 7.7% to 67%.

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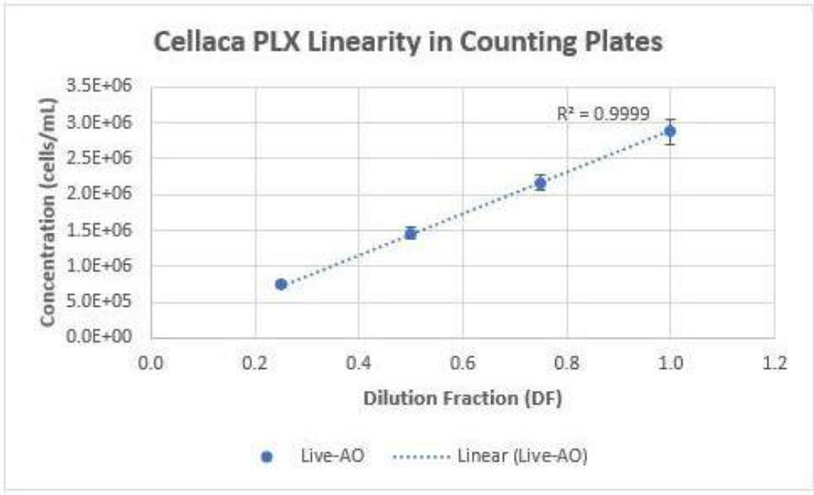
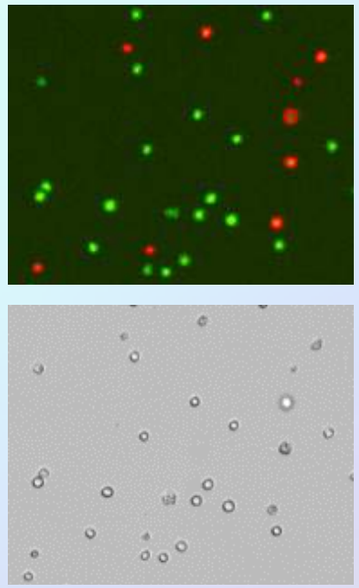
More Ways to Multiplex

High-Throughput Cell Counting

Cell counting, concentration, and viability are vital for obtaining consistent, reliable results. Whether examining samples for cell health or measuring concentration for downstream assays, the Cellaca PLX image cytometry system provides results you can count on.



Linear graph of live cells stained with AOPI using Nexcelom counting plates (n = 9 per DF).



Captured brightfield and fluorescent images of Jurkat cells stained with AOPI are automatically identified and counted. AO-stained live cells are outlined in green, and PI-stained dead cells are outlined in red.

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Count On Our Support

Nexcelom, a PerkinElmer company, focuses on providing laboratory solutions and support to meet and exceed today's researchers' specific needs. We collaborate with customers every day, analyzing new cell types, validating new cell-based assays, and exploring new therapeutic areas and methodologies.

Through joint application development, we learn from our customers and assist with integration into their current workflows. Our specialists are committed to globally supporting cell quantification, in-depth analysis, and optimizing cell-based assays in academic and government research institutes, biotechnology, industrial settings, and more.

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For more information visit www.nexcelom.com/cellacaplx

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