bucher Update
biotec

March 2020
www.bucher.ch

DNA Seq and Protein Analysis

Discover true Single-Cell Multi-Omics

The novel Mission Bio Tapestri Platform

NanoView Biosciences' ExoView™ Platform

Enabling Exosome Discovery

Accurately detect and fully characterize extracellular vesicles

Bucher Biotec AG • Viaduktstrasse 42 • 4051 Basel • Phone 061 269 1111 • info@bucher.ch

Discover true Single-Cell Multi-Omics

DNA Seq and Protein Analysis

Introducing the new Mission Bio Tapestri Platform

One Cell. Genotype + Phenotype.

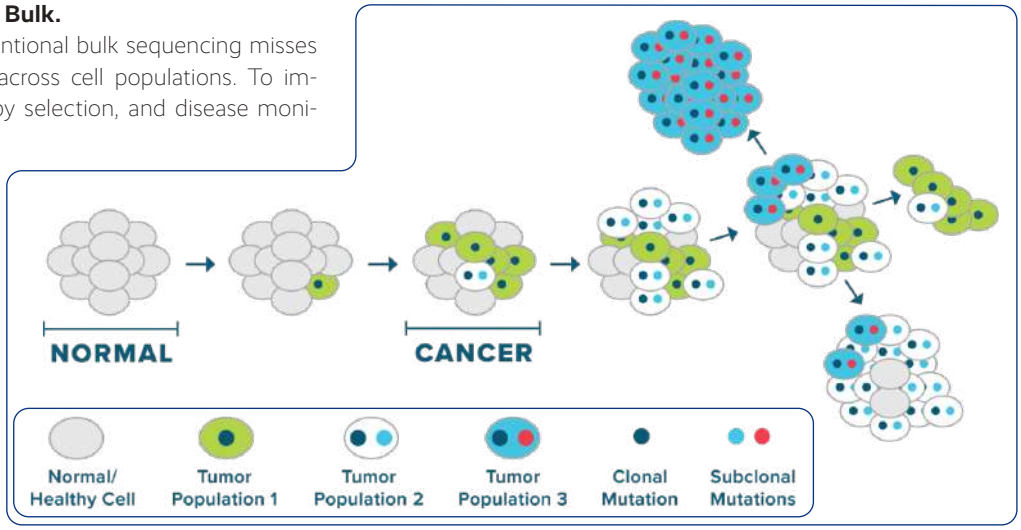
Because the complexity of cancer needs both.

The Tapestri Platform was developed to enable the accelerated and accessible detection of genomic variability. It delivers targeted solutions for high-impact application areas, including hematologic malignancies, solid tumor profiling, genome editing validation, or anything of interest using your custom-designed solution. This novel approach to single-cell DNA analysis paired with targeted gene panels offers a powerful strategy for detecting rare subclones, resolving mutational co-occurrence patterns, zygosity and reconstructing phylogenetic lineages. Tapestri provides to you the sensitivity, accuracy and capability of detecting low abundance clones, needed for single cell genomics to eventually inform clinical decisions and impact personalized medicine.

Break Out of the Limitations of Bulk.
The average read-out from conventional bulk sequencing misses the underlying genetic diversity across cell populations. To improve patient stratification, therapy selection, and disease monitoring we need insights into mutation co-occurrence within every single cell. The Tapestri Platform revolutionizes the capability to directly assess the clonal architecture of a sample. You can run targeted single-cell DNA panels with catalog and customizable content, so you can focus on the mutations and regions of interest that are most informative for your disease research. In addition, oligo-tagged protein antibodies can now be added to your Tapestri experiments to uncover true multi-omic information from thousands of single cells. It's the ability to understand heterogeneity at the single-cell level that is poised to help move precision medicine forward.

- **Single-cell DNA & protein analysis from up to 10,000 cells**
- **SNV, indel, CNV and LOH calls from DNA**
- **High sensitivity for rare clones – down to 0.1%**
- **Genotype and Phenotype from the same single cell**
- **Intuitive software solution for single-cell DNA and protein analysis**

The Precision Genomics Platform™.
Tapestri is the first and only single-cell multi-omic platform capable of detecting SNVs, CNVs, and protein changes simultaneously from the same cell.



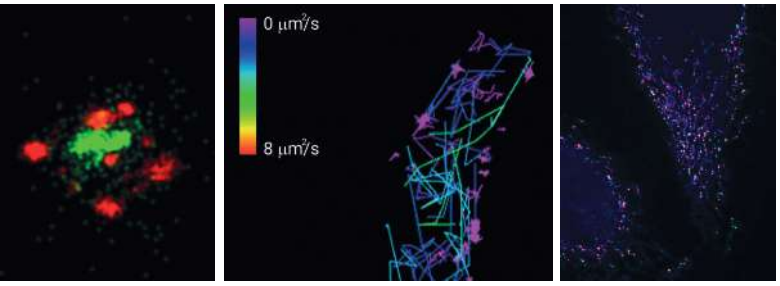
> *"No technology prior to Tapestri has been able to give us the resolution to decipher co-occurring mutations in the same clones. These insights are especially important in our study of resistance mechanisms and combinatorial therapies in key clinical trials."*
>
> **Catherine Smith, MD,** UCFS, Helen Diller Family Comprehensive Cancer Center

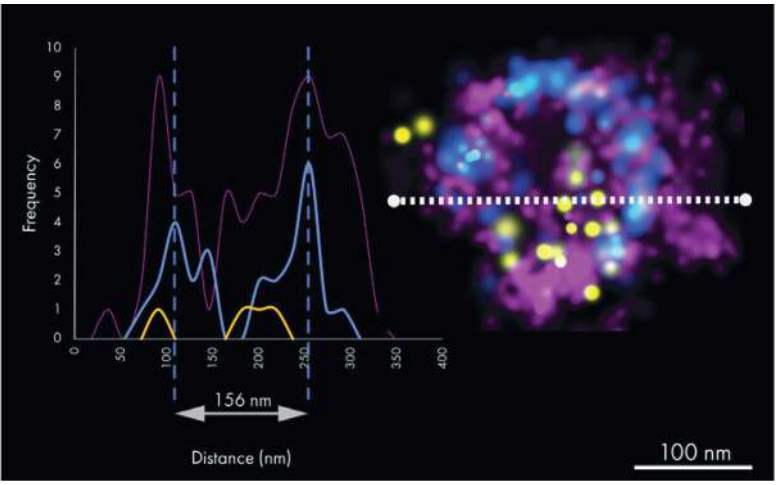
The Power of Small

The best super-resolution microscopy experience

Meet the Nanoimager

The Nanoimager is the world's first, desktop-sized microscope capable of observing individual molecules within living cells. It offers various modes of operation including dSTORM, PALM, SIM, smFRET and supports illumination modes from epifluorescence to TIRF. With this range on offer, it's easier than ever to get the most out of fluorescence microscopy, both when imaging fixed samples stained with immunofluorescence protocols or during live-cell imaging.





- **Single-Particle Tracking**
  - Microfluidics compatible
  - Whole body heating
  - Dedicated tracking analysis
- **dSTORM & PALM**
  - Resolution up to 20 nm
  - Real time rendering
  - 3D imaging
- **Single-Molecule FRET**
  - Interactions within 1-10 nm range
  - Individual and group events
  - Dedicated smFRET analysis
- **Unique, compact design**
  - Compatible with BSL3 safety cabinets
  - Minimal space requirements in BSL4 facilities

Interested in evaluating super-resolution microscopy?

Advanced Microscopy For All
Created by scientists for scientists, the Nanoimager delivers the highest precision for single molecule and advanced imaging.

This highly sophisticated research tool enables super-resolution applications dSTORM, PALM and single particle tracking with ultimate precision, even at 20 nm scale, by stabilizing both drift and vibrations. Integrated analytics tools deliver faster, accessible data even before your task completes.

Proven in the lab
The Nanoimager has earned its place in the great seats of academia and research. Hoffmann-La Roche, Univ. Zürich, the University of Cambridge, Harvard and Cancer Research UK are just a few of the users deploying the Nanoimager for diverse applications in microscopy.

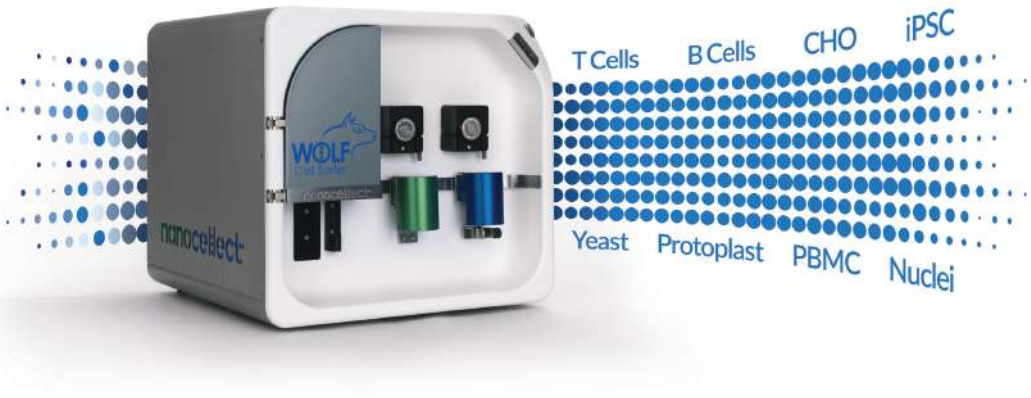
Nanoimager Applications

- Tracking Viral Particles & Extracellular vesicles
- Protein Complex Assembly
- Host Pathogen Interactions
- Single Molecule Tracking
- Quantitative Cellular Imaging
- Molecular Mechanisms and Interactions

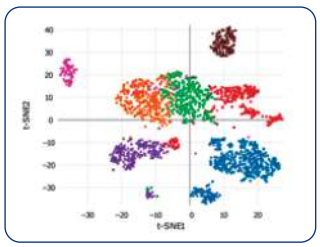
Happy Cells. Better Science.

Increase Library Quality and Complexity with a gentle Cell Sorter

Introducing the NanoCellect gentle WOLF® Cell Sorter



Unsorted PBMCs



WOLF Sorted PBMCs

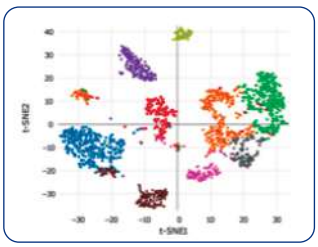


Figure: t-SNE projection of cell colored by automating clustering in unsorted and WOLF sorted PBMCs.

The WOLF Cell Sorter is a novel microfluidic-based cell sorter compatible with several sequencing platforms. At less than 2 psi, the WOLF is gentler than conventional cell sorters, enabling healthier cells and higher cellular DNA, as well as RNA integrity post-sort. Low shear stress during cell sorting avoids potential gene expression changes induced by traditional sorters. In addition, the WOLF excels at excluding dead cells and debris; therefore, maximizing the data generated per dollar spent on sequencing reagents and analysis time. Furthermore, the WOLF's microfluidic cartridges are completely disposable, everything the sample and sheath fluid touch is sterile and free from sample to sample contamination. In addition, with 5 parameters of detection, the WOLF provides higher rates of singlet detection and live/dead discrimination compared to cell printers and limiting dilution.

The quality of sequencing results is directly dependent on the quality of the sample that is prepared. When isolating a target population for the sequencing workflow, it is critical to maximize cell viability. Using the WOLF upstream of loading your sample allows not only the isolation of the target cell population, but also removal of dead cells, debris and doublets, while allowing the cells to remain healthy due to the gentle sorting mechanism. Thereby, the library quality and complexity can be significantly increased. For example, the number of UMIs and therefore RNA transcripts per cell is significantly higher in WOLF sorted samples compared to unsorted controls. In addition, more clusters can be distinguished, and they are more distinct. Because of these features, the WOLF Cell Sorter is a registered 1**0x Genomics Compatible Partners Program product, and is equally compatible with the targeted DNA-sequencing platform Tapestri from Mission Bio.**

SCAN ME

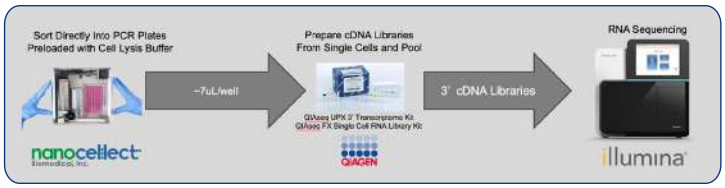
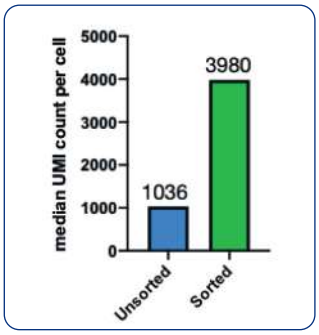


Figure 2: WOLF to QIAseq scRNA-Sequencing Workflow

In combination with the N1 Single Cell Dispenser, the WOLF Cell Sorter can dispense 1 to 100 cells directly into a 96 or 384 PCR plate, seamlessly transitioning from cell sorter to library preparation. For this purpose, the WOLF is validated with QIAGEN's QIAseq RNA library preparation kits.

Coupled with sterile microfluidics, easy-to-use design and software, fluidic flexibility, cartridge-based sample loading, and less than one minute clean-up time, the WOLF Cell Sorter is not only ideally suited for genomic sample prep, but also for gene editing, cell line development, and a variety of other applications requiring single cell isolation.

Median UMI Counts per Cell



Cell sorting has never been so easy!

Advancing the Boundaries of Benchtop Flow Cytometry

Introducing ACEA Biosciences' NovoCyte Quanteon™ and Advanteon™

NovoCyte Quanteon and Advanteon flow cytometers build on their successful predecessor, the NovoCyte, to provide an expanded set of capabilities that accommodate today's high-end and increasingly sophisticated multi-color flow cytometry assays. Scientists now have the flexibility to choose from up to 25 fluorescent channels utilizing 1-4 lasers with up to 25 independent detectors. The NovoSampler Q™, which can be integrated into different laboratory automation platforms, efficiently processes both FACS tubes (using a 40-tube rack) and 24-, 48-, 96-, and 384-well plates. The intuitive and industry leading NovoExpress® software has been further advanced, providing an exceptional user experience in data acquisition, analysis and reporting.

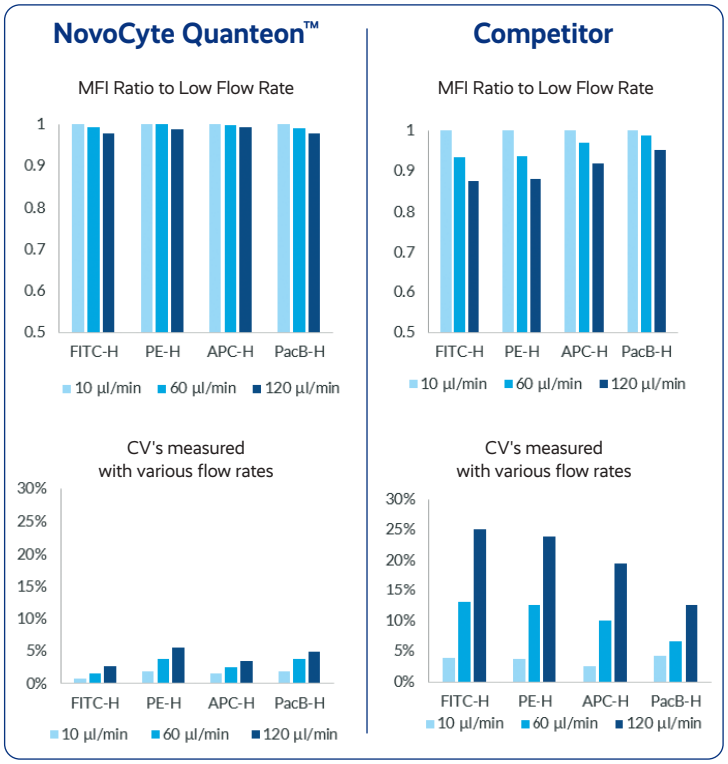
Flow Cytometers with Exceptional Reliability:
ACEA Biosciences' (part of Agilent) NovoCyte Quanteon and Advanteon

Walk-away Automation Simplifies Your Workflow

Easy startup & shut down: Quick startup with automated fluidic rinsing takes only minutes to prepare the instrument for your daily use. The configurable pre-scheduled shutdown thoroughly cleans at a specified time each day to eliminate the hassle of end-of-day manual cleaning.

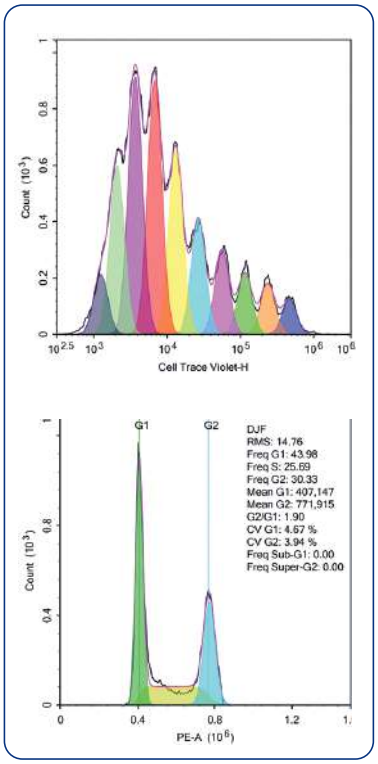
Embedded quality control: Quickly run daily QC, automatically generate comprehensive QC reports, and conveniently track performance over time with Levey-Jennings plots. The automatic QC test ensures proper performance monitoring on not only a day-to-day basis, but also over long-term use.

Continuously monitors fluidic levels for you: A fluidic station capable of sensing low fluid or high waste levels eliminates the need of manual inspection. Fluidics consumption is estimated before plate runs to ensure uninterrupted sample acquisition.



Hassle-free fluidics: Electronically monitored valves and sensors allow for automatic clog detection and recovery. A feedback control system continuously manages sheath flow rate to maintain great stability.

Consistent results, fast or slow: Equipped with high quality lasers, optical filters and detectors to ensure consistent signal detection, and combined with fluidic feedback control mechanisms to maintain steady flow rates, the NovoCyte Quanteon and Advanteon are the flow cytometers you can always rely on.



Both have demonstrated superior stability across a wide range of sample flow rates, a critical requirement for a high end flow cytometer to provide consistent results under variable operating conditions. The NovoCyte Quanteon and Advanteon give you peace of mind so you can focus more on your experiments.

Advanced Data Analysis made easy by NovoExpress®

- Cell Proliferation Modeling
- New Cell Cycle Analysis Module
- Heat-map Data Display

Next Generation Cell Counters

Count Cells like a Champion. Because Time is Power!

Logos Biosystems' Luna™ Automated Cell Counter Series

The popular LUNA™ Family of Automated Cell Counters
This highly advanced product family of automated cell counters is used by highly satisfied researchers in numerous labs worldwide.

LUNA-II™ Automated Cell Counter
The most advanced cell counter with unmatched speed, accuracy, and consistency of measurement. It is a stand-alone instrument integrating precision microscopy optics, onboard computer, image analysis software, autofocus system, and built-in printer.

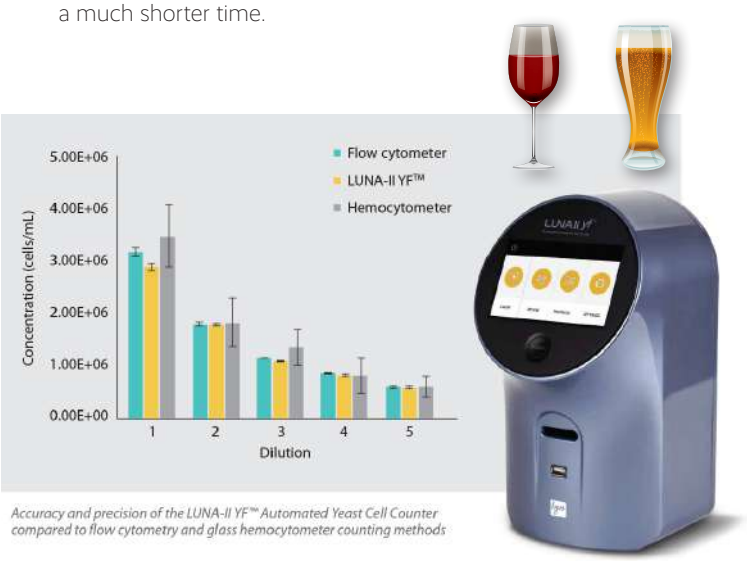
The LUNA-II automated cell counter accurately detects total/live/dead cells at concentrations ranging from 5 x 10^4 to 1 x 10^7 cells/mL and cell sizes between 3 and 60µm, using brightfield imaging.

LUNA-FL™ Dual Fluorescence Cell Counting
A quantum leap for automated cell counting and cell viability analysis. The LUNA-FL automated cell counter gives you sensitive and accurate live/dead cell counting results without limitation of cell types.

The LUNA-FL inherited the proven performance of the LUNA Automated Cell Counter with the brightfield microscope optics and the powerful and accurate cell counter algorithm. The integrated dual fluorescence microscope optics of the LUNA-FL allows you to precisely stain live / dead cells and thereby exclude undesirable debris. Resulating in the most accurate cell counting experience ever!

Yeast Cell Counter LUNA-II YF™
Yeast counting has never been this fast and easy. The LUNA-II YF is a fully automated, image-based yeast cell counter. Dual fluorescence optics, an autofocusing liquid lens, and an advanced counting algorithm produce yeast cell count and viability data in just 15 seconds.

No more subjectivity and wasted time on manual cell counting. LUNA-II YF counts yeast cells stained with fluorescent nucleic acid dyes with the precision and consistency of a flow cytometer, but in a much shorter time.



Accuracy and precision of the LUNA-II YF™ Automated Yeast Cell Counter compared to flow cytometry and glass hemocytometer counting methods

Rapid and Accurate Single Bacteria Cell Quantification
The QUANTOM Tx™ Microbial Cell Counter is an image-based, automated cell counter that can count individual bacterial cells in mere minutes. The sophisticated QUANTOM cell counting algorithm is the first of its kind, capable of detecting individual bacterial cells regardless of their diverse morphologies and arrangements. Multiple images of fluorescence-stained cells are captured and analyzed automatically for rapid and accurate bacterial cell counts.

Please contact us in order to discuss your specific cell counting requirements.

Sectioning is Time. We Cut the Time!

Tissue Clearing for High-Resolution 3D Imaging

Logos Biosystems' X-CLARITY™

The X-CLARITY System is an all-in-one, easy-to-use solution for electrophoretic tissue clearing. Its unique design accelerates the removal of lipids from tissues while preserving the structural integrity of the sample.

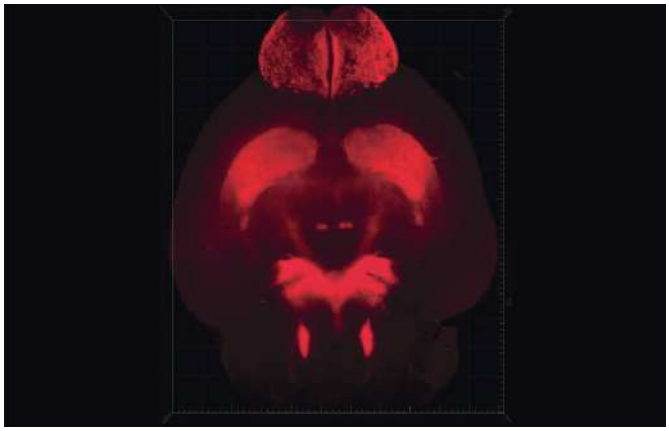
Utilizing Electrophoretic Tissue Clearing (ETC), platinum-plated electrodes generate an electric field to accelerate the removal of lipids from tissues in a highly efficient manner. A built-in temperature control system actively cools and heats buffer to maintain consistent temperatures during clearing. Buffer is constantly circulated to ensure consistent buffering capacity, temperature control, and elimination of tissue clearing byproducts.

- **Precise temperature control**
  - Active buffer cooling and heating capacity
  - Sensitive and accurate temperature sensor
- **Compatible with multiple tissue types and sizes**
  - Electrophoretic and passive clearing
  - Holders of various sizes available
- **User-friendly setup**
  - Simple touchscreen interface
  - Ready-to-use clearing solution

DeepLabel™ Antibody Staining Kit

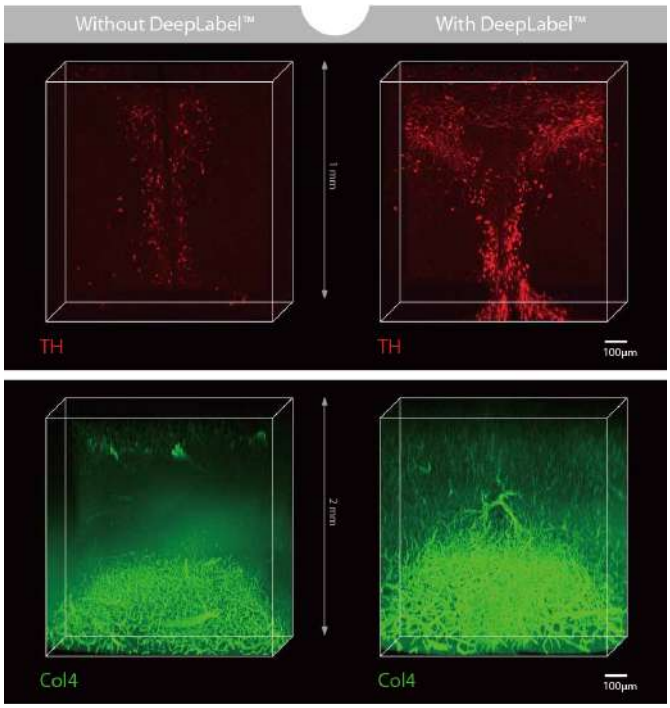
The DeepLabel Antibody Staining Kit is a set of non-toxic, ready-to-use reagents optimized for use with clarified tissues. With DeepLabel, macromolecular probes can rapidly and efficiently penetrate thick, protein-dense tissues for site-specific binding at lower antibody concentrations. DeepLabel facilitates homogenous antibody staining with 2.6x greater signal-to-background ratio than conventional staining methods. Use DeepLabel for vibrant fluorescence imaging at subcellular resolution. Compatible with virtually all antibodies and all cleared tissues, DeepLabel enhances antibody diffusion into cleared tissues.

Accelerate your research with X-CLARITY!



Whole adult mouse brain stained using DeepLabel with anti-TH (red).

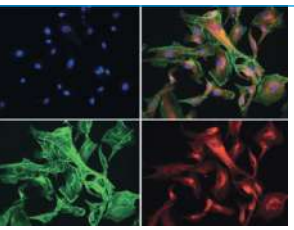
DeepLabel enhances antibody diffusion into cleared tissues.



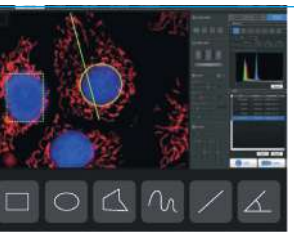
Comparison of antibody staining efficiency with or without DeepLabel™. DeepLabel Antibody Staining Kit enhances antibody penetration and site-specific binding in thick, cleared tissues for robust and efficient labeling. Mouse brains labeled with DeepLabel had markedly better antibody distribution and low background for excellent signal-to-noise ratio.

Multicolor Fluorescence Imaging and Data Analysis in one Device

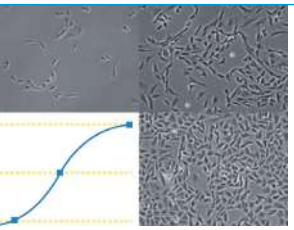
Logos Biosystems' CELENA® S Digital Imaging System



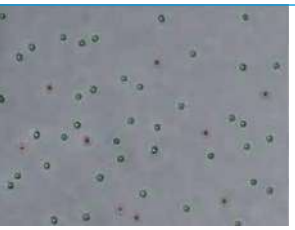
Multicolor Fluorescence and Brightfield Imaging
Long-lasting LEDs and hard-coated optical filters ensure robust fluorescence imaging. Adjustable LEDs allow precise control over the gain and intensity of transmitted light.



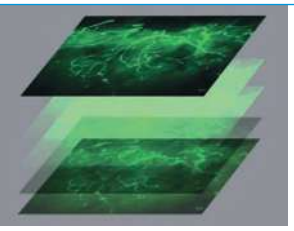
Onboard Data Analysis
Analyze your images immediately upon capture. Save measurement data to a USB drive.



Live Cell Monitoring
Monitor live cells with the time lapse function or the growth monitor. Attach the on-stage incubator to control the temperature, humidity, and CO_2 / O_2 levels.



Automated Cell Count and Viability Analysis
Check cell counts and viability with the on-board cell counter



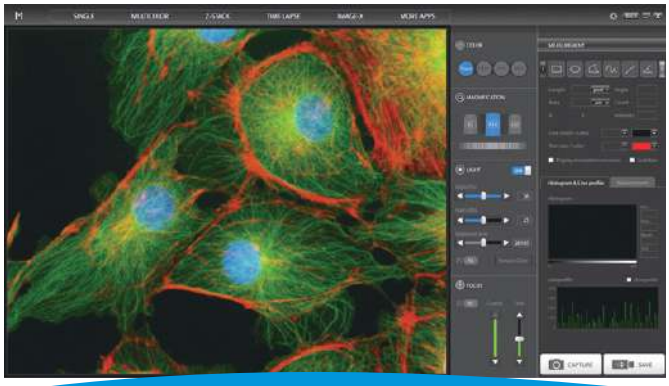
Z-stack Imaging
Capture multiple images along the Z-axis with the Z-stack function.

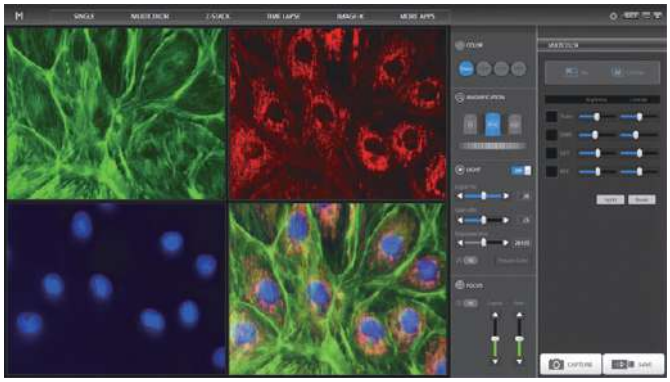
The CELENA S is a comprehensive solution for capturing publication-quality fluorescence, brightfield and phase contrast images. Sophisticated software accommodates a wide range of imaging applications such as image capture and analysis, live cell imaging, and even automated cell counting. Capture amazing detail with a few clicks of your mouse.

The CELENA S is a powerful digital imaging system that simplifies imaging and data analysis. Integrating advanced precision optics, a highly sensitive scientific grade CMOS camera, and a computer with user-friendly software, the CELENA S allows researchers to capture vivid, publication quality images with ease. Interchangeable objectives and filter cubes accommodate a wide range of imaging needs. Researchers can use the CELENA S for multiple applications, such as capturing and analyzing multicolor fluorescence images, live cell imaging, and automated cell counting.

Are you curious to see the system or even better to see your cells or samples right on the system?

We are looking forward to providing more information and arranging for an onsite demo of the CELENA S.





Automated High Content Imaging

Acquisition & Analysis for Drug Discovery & Cell Biology

Logos Biosystems' CELENA® X

The CELENA® X High Content Imaging System is an integrated imaging system designed for rapid, high content image acquisition and analysis. Customizable imaging protocols, image-based and laser autofocusing modules, and a motorized XYZ stage simplify well plate imaging and slide scanning. It is as flexible as powerful, with interchangeable objectives and LED filter cubes to accommodate a wide range of fixed and live cell imaging applications.

Key Features:

- Fully automated image acquisition and analysis
- Rapid multi-well plate imaging
- Powerful cell based assay software package
- Whole slide imaging
- Area scanning & image stitching
- Z-stacking & focus merging
- Time lapse live cell imaging

Applications:

- Cell-Based Assays
- Cell Counting
- Drug Discovery
- Histology
- Live Confluency Monitoring

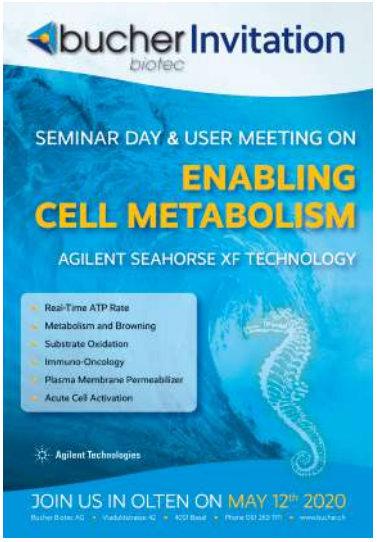
We are looking forward to your call in order to discuss your specific application!

SAVE THE DATE

Invitation to our Seminar Day & User Meeting on

Seahorse XF Technology Provides a New Window on Cell Metabolism

Olten, May 12th 2020



We would like to invite you to our upcoming seminar day. Further information will be distributed soon. We are looking forward to welcoming you in Olten!

Speakers:

- **David Ferrick,** Senior Strategy Director, Cell Analysis Division, Agilent USA
- **Sebastien Herzig,** Nestlé Institute of Health Sciences SA
- **Elisa Randi,** Dep. of Medicine / Pharmacology, Univ. Fribourg
- **Tiia Snäkä**, Depart. of Biochemstry, Univ. Lausanne
- **Imane Lejri,** Neurobiology, Univ. Psychiatrische Kliniken Basel
- **Svetoslav Kalaydjiev,** Agilent Technologies, UK
- **Audrey Lilly von Münchow,** Bucher Biotec AG

Participation is free of charge! In order to register simply give us a call (061 269 1111) or send us an email (seminar@bucher.ch)

Metabolic analysis with fewer cells, greater precision, and expanded possibilities

Introducing the new Agilent Seahorse XF HS Mini

Agilent Seahorse XF Analyzers measure oxygen consumption rate (OCR) and extracellular acidification rate (ECAR) of live cells in a multi-well plate, interrogating key cellular functions such as mitochondrial respiration and glycolysis.

The new Agilent Seahorse XF HS Mini and the dedicated HS miniplates build on this highly regarded Seahorse technology but add another layer of sensitivity. Finally, you can generate robust XF data from low respiring or sample-limited cells. The instrument supports all well-known XF assay kits and allows data review with the new Seahorse Analytics platform. The specialized HS miniplates comprise a unique "ring-well" architecture that is reducing cell sample requirements and providing better sensitivity and precision for greater confidence in your data. Moreover, those miniplates are now available precoated with poly-D-lysine for streamlined workflows. Besides those high sensitivity features the Seahorse XF HS Mini also supports your routine cell analysis with full backward compatibility to XFp Miniplates. Enter a new era and conduct energy metabolism assays using up to 4-fold fewer cells per well.

New Agilent Seahorse XF HS Miniplate

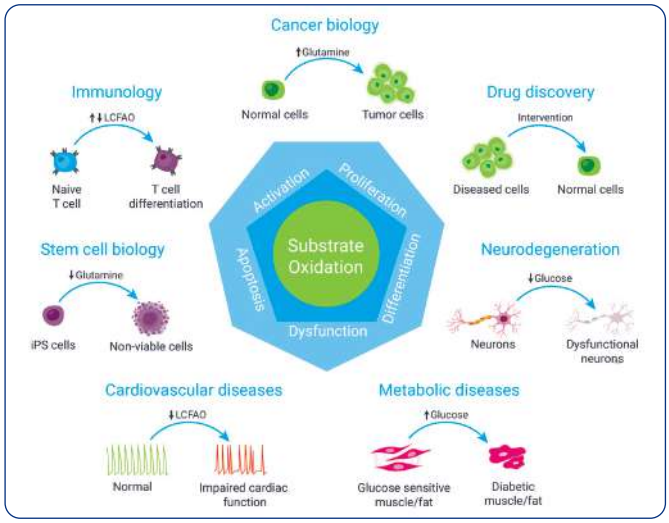
- **Discover new biology on cell types not previously measurable**
- **Use up to 75% fewer cells per well, enabling more replicates from limited samples**
- **Ideal for limited, primary isolated, rare, or sorted cells**
- **Optimized workflow for suspension and immune cell types**

Unlock new discoveries with the Agilent Seahorse XF HS Mini Analyzer and HS Miniplate!

Reveal your cell's metabolic needs

New Agilent Seahorse XF Substrate Oxidation Stress Tests

Agilent Seahorse XF technology measures energy metabolism in real time, providing critical functional information that relates directly to cellular health and fitness. The brand-new Seahorse XF Substrate Oxidation Stress Test Kits are a suite of optimized solutions for rapidly measuring cellular substrate oxidation by assessing changes in oxygen consumption (OCR) in live cells. These kits allow for the interrogation of three primary substrates that fuel the mitochondria: long chain fatty acids, glucose/pyruvate, and/or glutamine, facilitating investigation of how cells alter or shift oxidation of specific substrates to perform key cellular functions. By combining the well-recognized XF assay for mitochondrial function (Cell Mito Stress Test) with substrate pathway specific inhibitors (etomoxir, UK5099, BPTES), these kits report multiple functional parameters, providing rich and robust data to facilitate the investigation of specific mitochondrial substrates that are relevant or required for cellular phenotype and function.



Examples of mitochondrial substrate oxidation driving cell phenotype and (dys) function.

Harness your Agilent Seahorse XF analyzer with the Seahorse XF Substrate Oxidation Stress Test Kits to:

- **Measure mitochondrial substrate oxidation – Long-chain fatty acids, glucose/pyruvate, glutamine**
- **Reveal substrate dependency under basal and high energy demand states**
- **Gain real-time multiparametric information**
- **With validated reagents, standardized protocols, and straight-forward analysis**

Every Cell Matters

A Busy Bio-Lab needs an efficient Cell Counter

Logos Biosystems' new LUNA-FX7™ Automated Cell Counter

Introducing the LUNA-FX7 - the automated cell counter that builds on the success of its predecessors. The LUNA-FX7 is our most powerful cell counter to date, with unmatched cell counting accuracy, a maximum counting volume of 5 µL (10 times that of conventional cell counters), all new optics, dual fluorescence and brightfield illumination, a fast and precise autofocus, and multichannel pipette-ready 8-channel slides to count up to eight sample simultaneously. To help monitor and optimize bioprocesses, the LUNA-FX7 has built-in quality control features and precision validation slides. 21 CFR Part 11-ready, the LUNA-FX7 improves the security and efficiency of your lab's workflow.

LUNA FX7™
Automated Cell Counter

	NEW				
	LUNA™ 1-Channel Slides	LUNA™ 8-Channel Slides	LUNA™ 3-Channel Slides	LUNA™ Cell Counting Slides / PhotonSlides™	LUNA™ Reusable Slides
Compatible slides					
Sample throughtput	1 sample	Up to 8 samples	Up to 3 samples	Up to 2 samples	1 sample
Sample loading volume	50 µL	10 µL / chamber	10 µL / chamber	10 µL / chamber	10 µL
Maximum analysis volume	5 µL	0.5 µL / chamber	1.3 µL / chamber	1.3 µL / chamber	1.3 µL

Unmatched cell counting accuracy

- All-new optics
- Increased counting volume for the lowest CV per count
- Multichannel pipette-compatible 8-channel slides
- Fast and precise autofocus
- More robust and sophisticated counting algorithms
- Customizable cell-detection protocols

Optimized for bioprocess production applications

- Quality control and validation software
- Range of standard validation slides

21 CFR Part 11 ready

- User access and rights management
- Online data storage and control
- Encrypted electronic records

Optimized Microplate Solutions

Microplates are the Currency of the Lab!

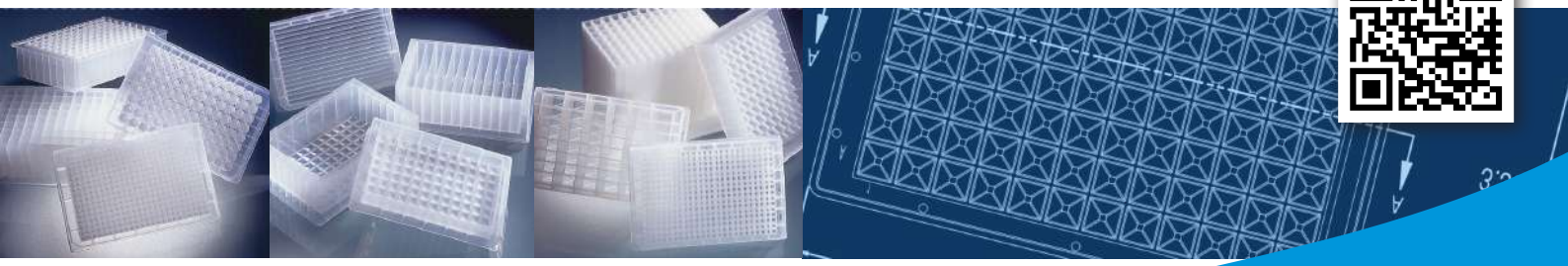
Agilent's standard and custom Microplate Solutions

Did you know that Agilent is a worldwide leader in the design and manufacturing of high-quality microplates for biological research and drug discovery?

Agilent provides standard and custom solutions for academic and government institutions and pharmaceutical and biotech organizations, as well as large and small OEM manufacturers of assay kits and lab instruments suppliers. All of Agilent's products are designed and built to obtain the highest quality results.

- Storage / Assay Microplates
- Filter Plates
- Reagent Reservoirs
- Customized Microplates – Tell us what you need!

Simply check the online Product Selection Tool via www.agilentmicroplates.com or contact us to receive a copy of the Agilent Microplate Solutions brochure.



Direct, in-solution Quantification and Characterization of Proteins and Particles

360° Immunogenicity Data with True Native Testing

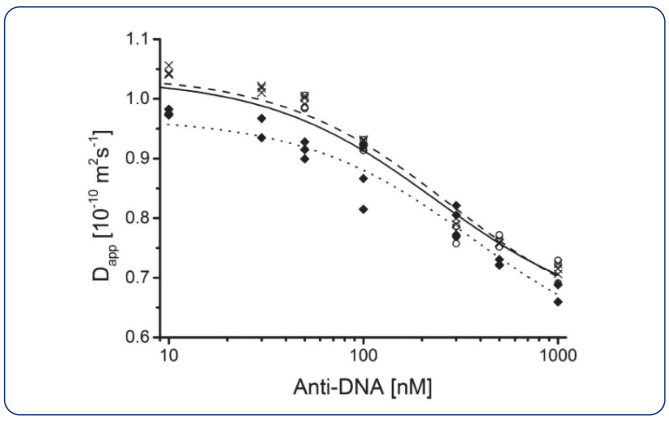
Introducing the Fidabio Platform

Flow Induced Dispersion Analysis (FIDA) is a new proprietary technology developed for quantification and characterization of proteins (including biologics), and other molecules and particles from 0.5 - 1'000 nm, incl. affinity, concentration, absolute size and viscosity determination. FIDA is characterized by being fast (minutes), requiring very small sample amounts (nL-mL), and being exceptionally tolerant to the sample matrix. Contrary to most other procedures, the FIDA methodology is based on binding in homogenous solutions; complications related to non-specific surface adsorption and challenging assay development are therefore avoided. The unique features of FIDA enable characterization and quantification in native (biorelevant) environments and in-built assay quality control and automation.

Applications

- **Quantification of Proteins, Peptides, DNA, Small Molecules etc.**
- **Affinity Constants**
- **Molecular Size / Hydrodynamic Radius (0,1 – 500nm)**
- **Diffusion Coefficient**
- **Viscosity**

The FIDA platform, which is broadly compatible with existing lab equipment and chemistries, offers reductions in time to develop new assays by more than 75% compared to conventional systems. It is based on detection under native conditions with less than 3 microliters of sample material, providing significant improvements in cost, versatility, time and accuracy over conventional methods currently used in academic and industrial research and clinics.



Binding curves for the interaction between DNA-I and the monoclonal antibody against dsDNA in 100 mM phosphate buffer, pH 7.9, (open circles, protocol I), 20% (v/v) human plasma (crosses, protocol II), and 85% (v/v) human plasma (black diamonds, protocol III) . Affinity constant as a result of fitting

Poulsen et al., Anal. Chem. 2016, 88, 9056-9061

Validated Applications

- **Unique and precise size-based characterization and quantification of vesicles such as exosomes and liposomes in crude samples**
- **Determination of the oligomeric state of an analyte, e.g. TNF-alpha**
- **Quantitative, in-solution validation of Kd data generated with e.g. SPR or BLI**
- **Fast, accurate and reproducible quantification of e.g. IgG in fermentation media, plasma, serum etc.**

Please contact us via info@bucher.ch in order to obtain detailed information on the FIDA technology.

FIDA TECHNOLOGY
Detection under native conditions

APPLICATIONS
Commanding immunogenicity

RESEARCH FOCUS
Drug development and post launch safety

PRODUCTS
Easy protocols – results within 5 minutes.

Cell Control System

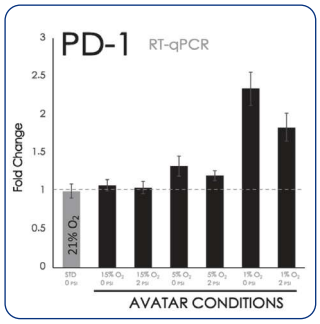
Optimized for Immuntherapy Research

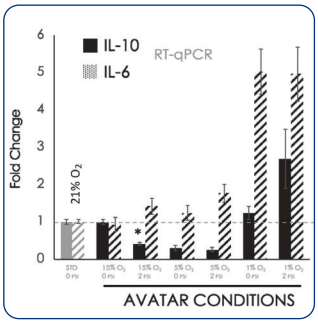
The XcellBio AVATAR™ System

The AVATAR System allows you to model the acidic, hypoxic, and pressurized immunosuppressive tumor microenvironment (TME).

Since every patient, tumor, and TME niche are slightly different from one another, xcellbio deliver this unique capability through arrayed modular systems for comparative environmental control. Hypoxia and pressure are directly involved in regulation of cell signaling, metabolism, gene and protein expression. This high impact is reflected by the 2019 Nobel prize awarded to hypoxia research.

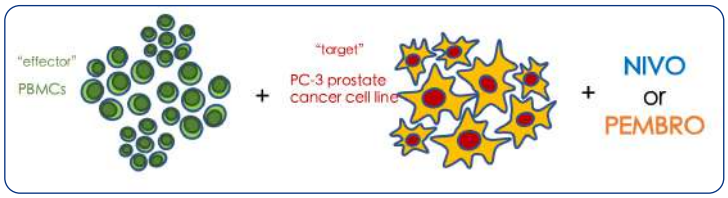
Unique capabilities for applications such as immunoprofiling and functional screening in a tumor microenvironment are highlighted below.





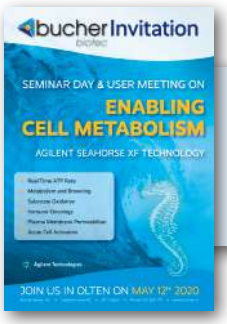
Recreate the tumor microenvironment, optimized for immunotherapy research:
The Avatar cell control system can promote the expression of markers associated with the immunosuppressive tumor microenvironment. PD-1 and CTLA-4 checkpoint inhibitors for example, exhibit increased expression under specific hypoxic and pressurized conditions. Whereas TIM-3 shows decreased expression under conditions resembling bone marrow microenvironment. Cytokines IL-10 and IL-6 expression is decreased and increased accordingly at such specific body-like conditions.

Predictive cell killing, using In vitro models of the immunosuppressive tumor microenvironment:
The Avatar cell control system can model the immunosuppressive tumor microenvironment to generate predictive cell killing results.



For example, the PD-1 checkpoint-inhibitor drug Pembrolizumab exhibits dramatic increase in tumor killing activity under Avatar conditions (hypoxic and pressurized culture) when compared to standard incubation conditions. Nivolumab, however, does now show altered tumor killing in the two systems.

How does your drug perform in the tumor microenvironment?



SAVE THE DATE

- **Bucher Biotec AG**
  Agilent Seahorse Seminar and
  Swiss User Meeting
  Olten, 12. May 2020

UPCOMING EVENTS

Please visit us at these events:

- **Symposium on Lab Automation 2020**
  HSR Rapperswil, 18. June 2020
- **MIC Day Bern 2020**
  Microscopy Imaging Center (MIC) Univ. Bern
  Uni Bern, 8. July 2020
- **Annual Meeting**
  Swiss Society for Microbiology SSM 2020
  Geneva, 2. - 4. September 2020
- **ILMAC Lausanne 2020**
  Lausanne, 7./8. October 2020
- **Genomics Live 2020**
  Congress Center Basel, 10. - 12. November 2020

Optimize, Analyze, Visualize, Realize... Faster!

Meet the new IntelliCyt® iQue3

The IntelliCyt platform converts flow cytometry into a true high-throughput method by sampling only microliters from each well, analyzing 96-well plates in as little as 5 minutes, and 384-well plates in 20 minutes. By reducing sample volumes to few microliters only, the IntelliCyt platform is saving reagent costs and conserving precious samples. With 7 logs of dynamic range in 13 fluorescent channels, it is ideal for multiplexing and allows sensitive cell analysis and bead-based quantification of up to 30 secreted proteins. All at the same time, in the same sample, from the same well.

Meet the new iQue3. The most advanced flow cytometry platform with a focus on speed from setup, to acquisition, and analysis. To get you from samples to actionable results in record time.

With its patented sampling method, the iQue3 acquires your samples faster than any other flow cytometer. To complement the screening capabilities it enables continuous plate loading through connection with any automation system. Furthermore, a new Enhanced Rinse Station (ERS) has been incorporated in the iQue3.

iQue3 Features:

- **1µl sampling volume**
- **96-wells in 5min, 384 in 20min**
- **3-laser, 13 fluorescent channels**
- **48-hour uninterrupted run time before replacing reagent cartridges**
- **Intelligent software monitoring of rinse station fluid levels**
- **Warnings for missing, low, and even user defined volume levels**
- **Automated vortexing just prior to sampling for improved Q.C. results**
- **Improved reagent cartridges with less evaporation and the ability to easily close and store if needed**

The IntelliCyt iQue3 comes as a complete solution to your lab. The integrated ForeCyt software addresses the analysis bottlenecks associated with multi-parametric information generation by enabling rapid data visualization and interpretation.

Tools such as profile maps, auto-generated IC50/EC50 curves, and analysis templates do the analysis for you at the end of the run. Optimized application-specific reagent kits with robust mix and read protocols for cell- and bead-based applications provide an integrated solution enabling high content, high throughput screening for deeper insight into complex biology.

IntelliCyt makes the difference!

"The iQue Screener PLUS has greatly facilitated our work in the development of a personalilzed immunotherapy for AML and MDS patients."

Alison Tarke, Research Scientist, Persimmune

Next Generation Single Cell Analysis

For Biopharmaceutical Discovery and Development

Sphere Fluidics' CytoMine® Platform

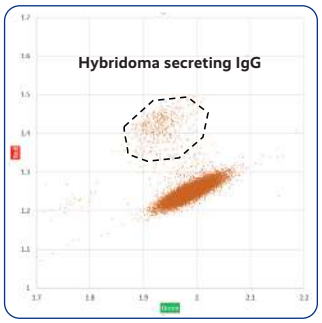
The challenge in biopharma is to screen large cell populations for antigen-specificity, productivity or other parameters, and then isolate rare cells with confidence of clonality.

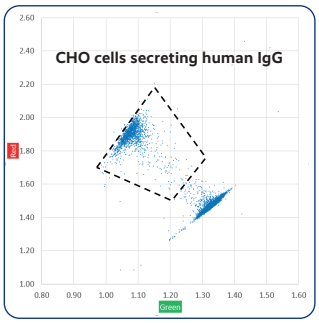
Cyto-Mine® has been developed to shrink the whole cell screening and cloning process into a single system to accelerate and simplify your workflow. Traditionally, different items of equipment would be required for the selection, isolation and cultivation of a single cell from a mixed population, resulting in a costly and time-consuming process that uses up valuable lab space and increases risk of sample contamination.

Sphere Fluidics' Cyto-Mine® technology is the first integrated device to automatically perform all of these crucial techniques in a single compact system.

- High-throughput single cell encapsulation
- Incubation followed by protein secretion assays
- Rapid cell sorting
- Dispensing of 'hit' single cells into individual microtiter plate wells
- Monoclonality assurance

Why choose the Cyto-Mine® Single Cell Analysis System?
This high-throughput instrument uses picodroplet technology and microfluidics to process around 1 million heterogeneous mammalian cells in less than half a day. Each cell is encapsulated in a picodroplet containing growth media, which acts as a bioreactor to compartmentalize the cell. Cell cultivation within the droplet then allows rapid selection for secreted molecules such as antibodies. The unique workflow enables selective screening of single cell "hits" to find rare lead candidates. **Hit selection is handled flexible, e.g. antigen-specific or isotype-specific selection, combined with expression level of the targets.**



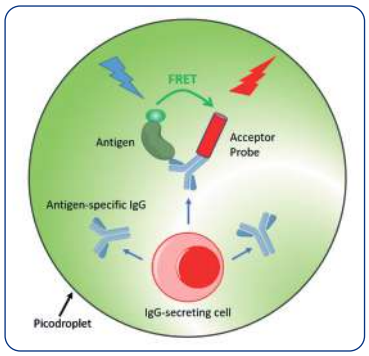


Typical scatter plots of FRET signal from individual picodroplets. Antibody secretion assays from single Hybridoma (left), or CHO cells (right) encapsulated in picodroplets.

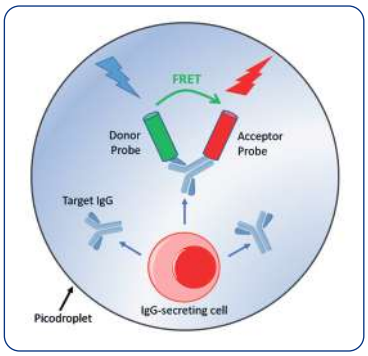
Cyto-Mine® Benefits:

- Cell integrity protected through gentle encapsulation and processing
- Cells maintained in preferred medium throughout run
- All processing steps undertaken at low temperature
- End to end sterility with disposable consumables
- Animal Origin Free reagents eliminate contamination risk
- Robust outgrowth of clones in wells post-dispensing

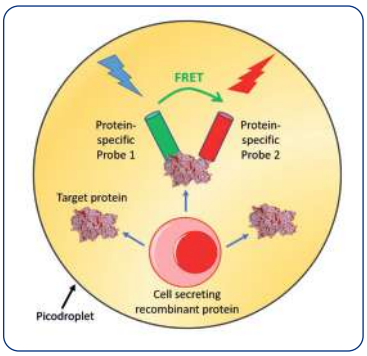
Please give us a call (061 269 1111). We are happy to discuss with you your specific requirements.



Antigen-Specific Assay:
• Hybridoma Fusion Screen
• B Cell Mining



IgG Secretion Assay:
• Productivity Screen



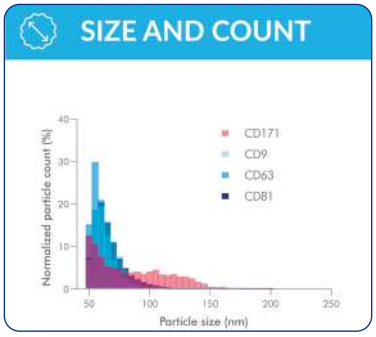
Customized Assays:
• Functionality
• Post-Translational Modifications
• Reporter Assays

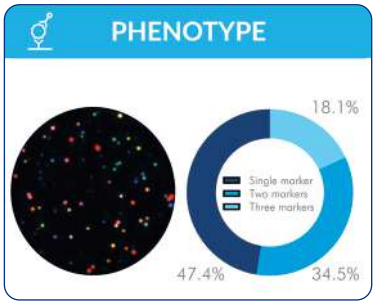
Enabling Exosome Discovery

Accurately detect and fully characterize extracellular vesicles!

Introducing the NanoView Bioscicences' ExoView® Platform

A step forward in characterization in the extracellular vesicles (EV) field, the fully automated ExoView platform provides multi-level and comprehensive EV measurement of EV size, count, phenotype, and biomarker colocalization. The ExoView platform provides previously unattainable information in a single, bias- and purification-free workflow.





ExoView R100 is an affinity-based technology that allows specific populations of EVs to bind in a multiplexed manner to a functionalized ExoView microarray chip, using 35µL of sample volume only.

Characterize samples based on EV size distribution and count

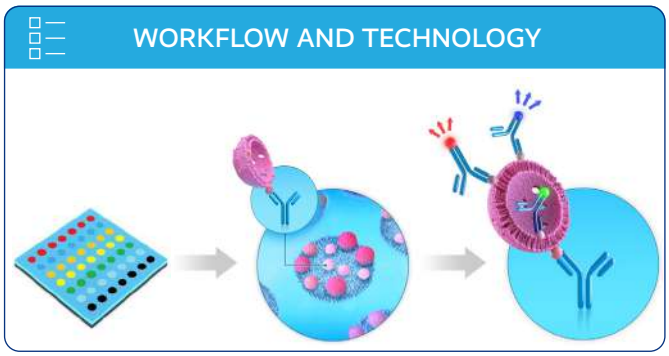
ExoView quantifies EV subpopulations defined by surface markers. The platform counts EVs specifically, directly in the unprocessed sample and excludes any contaminants, enabling EV quantification without purification. Linear range spans 3 orders of magnitude. In addition, EVs as small as 50 nm in diameter can be analyzed with excellent peak-to-peak resolution in heterogeneous samples.

Characterize EV based on unique protein signatures

NanoView Biosciences provides the ability to measure up to 4 markers on a single extracellular vesicle. To assess protein expression profile, both surface and luminal markers can be measured, while the EVs are simultaneously counted and sized. Detect low-abundance proteins on the smallest EVs.

Characterize EV subpopulations from multiple samples

In the ExoView workflow, EVs are captured on a microarray chip using antibodies. Subsequent EV permeabilization allows staining and probing of cargo proteins at the single-EV level. ExoView single-molecule sensitivity enables detection of even the smallest EVs with low protein expression.



In ExoView's single-vesicle assay, EVs are captured without purification by up to 6 different capture antibodies on the ExoView chip. Characterize multiple populations of EVs from a single sample and benefit from automated analysis of up to 9 samples.

Sample Matrices

- Blood plasma
- Blood serum
- Cerebrospinal fluid (CSF)
- Cell culture with or without bovine EVs
- Saliva
- Urine
- Follicular fluid
- Synovial fluid

The fully automated instrument can measure complex samples without the need for purification, while reducing costs, saving time, and eliminating purification biases.

Contact us in order to learn how ExoView can help you identify unique EV populations.