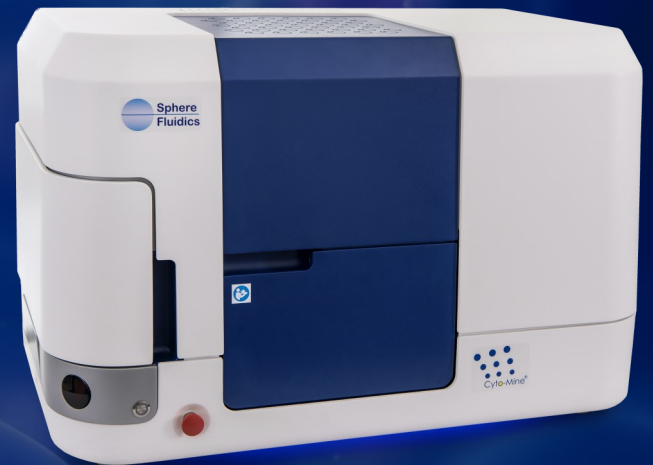


# Cyto-Mine®

The Single Cell Analysis  
and Monoclonality  
Assurance System



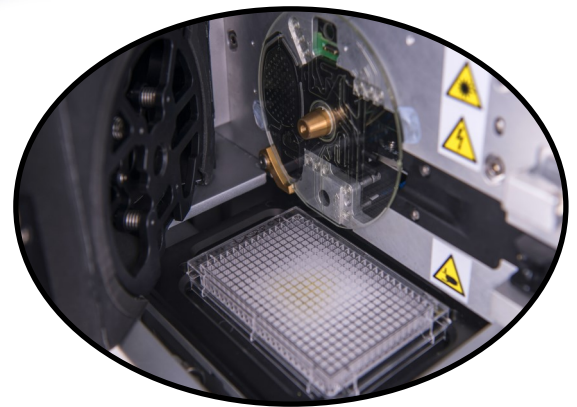
*Biopharmaceutical discovery and cell line development  
workflows streamlined like never before*

# The future is now...

Selective screening, cell isolation and clone verification integrated into a single platform



Cyto-Mine®



Cyto-Cartridge® and microplate loading bay

## Key Benefits:

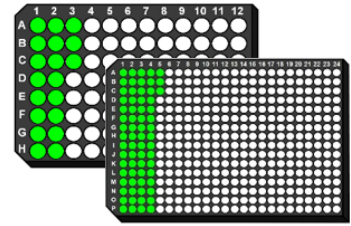
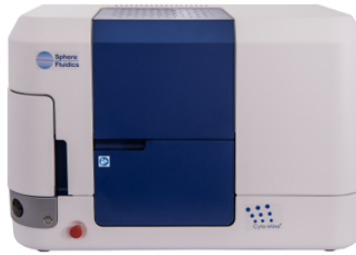
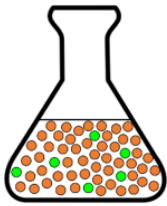
- High throughput cell screening
- Dramatic cost and time reduction
- Every cell assayed for secreted target protein specificity and/or productivity
- Collects the high value positives
- Generates images as proof of monoclonality
- Gentle and sterile process
- Animal Origin Free reagents

*“Cyto-Mine® technology provides a powerful tool for efficiently screening and isolating our rare, high-value producer cells from complex populations”*

**Leading pharma company**

# Let Cyto-Mine<sup>®</sup> simplify your workflow

Less than 1 working day



Complex cell population

Cyto-Mine<sup>®</sup>

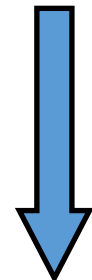
High value cells collected to 96- or 384-well microplates

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<sup>®</sup> has been developed to shrink the whole cell screening and cloning process into a single system to accelerate and simplify your workflow.

## Sample preparation

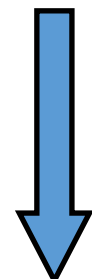
- Cell count
- Resuspend in fresh cell culture medium with Cyto-Surf<sup>®</sup>
- Add Animal Origin Free detection reagents
- Load to Cyto-Cartridge<sup>®</sup> and into Cyto-Mine<sup>®</sup>



0.5  
hour

## Cyto-Mine<sup>®</sup>

- Picodroplet generation and cell encapsulation
- Picodroplet incubation and antibody secretion assay
- Picodroplet sorting
- Picodroplet imaging and cell dispensing



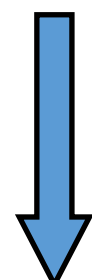
4-7  
hours

## Post-run processing

- Reverse transcription
- PCR
- Expression
- Sequencing

or

- Clone outgrowth
- Expansion
- Titer measurements

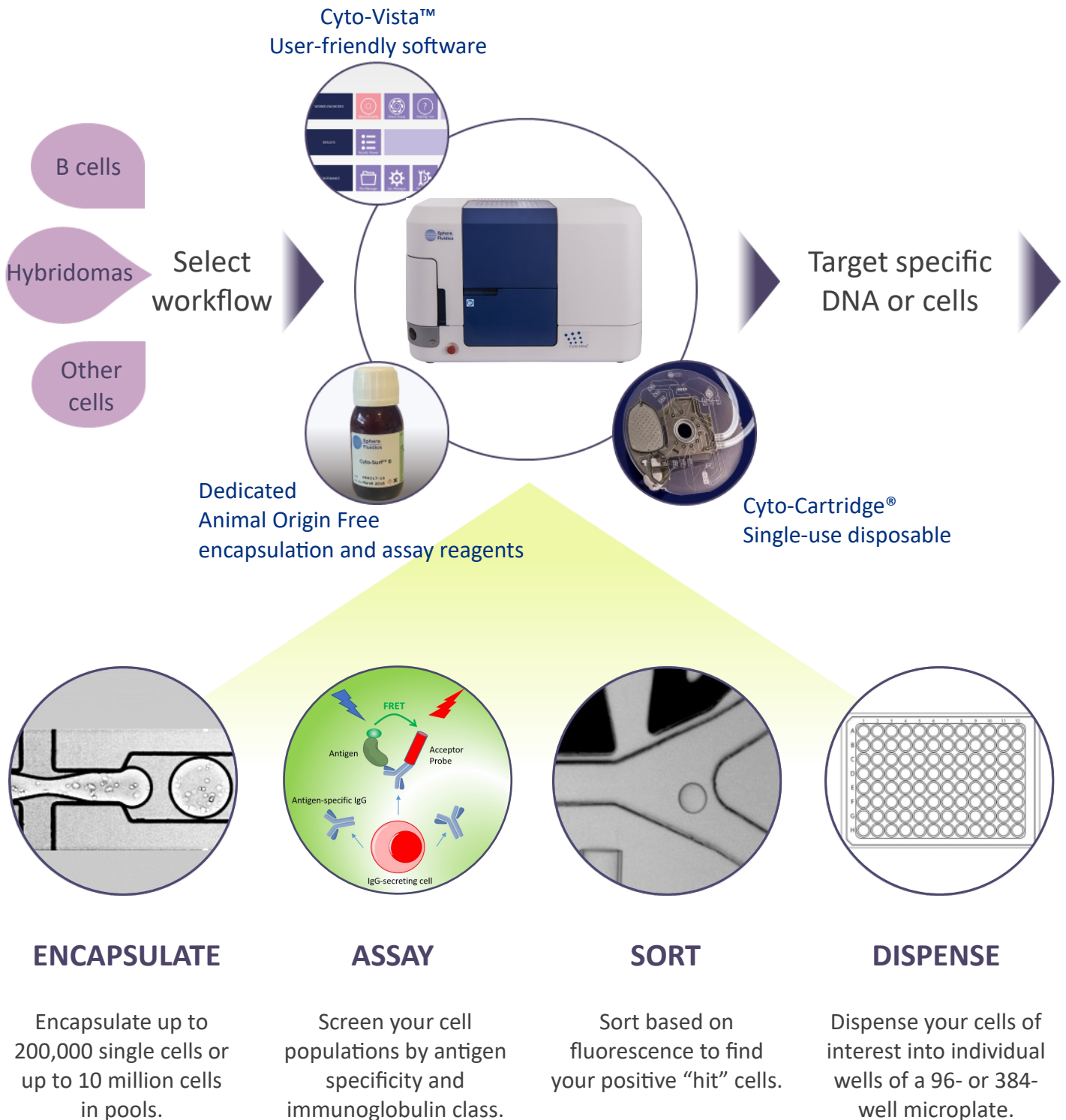


1-2  
weeks

# Accelerate your biologics discovery a

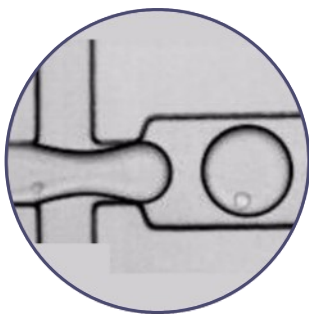
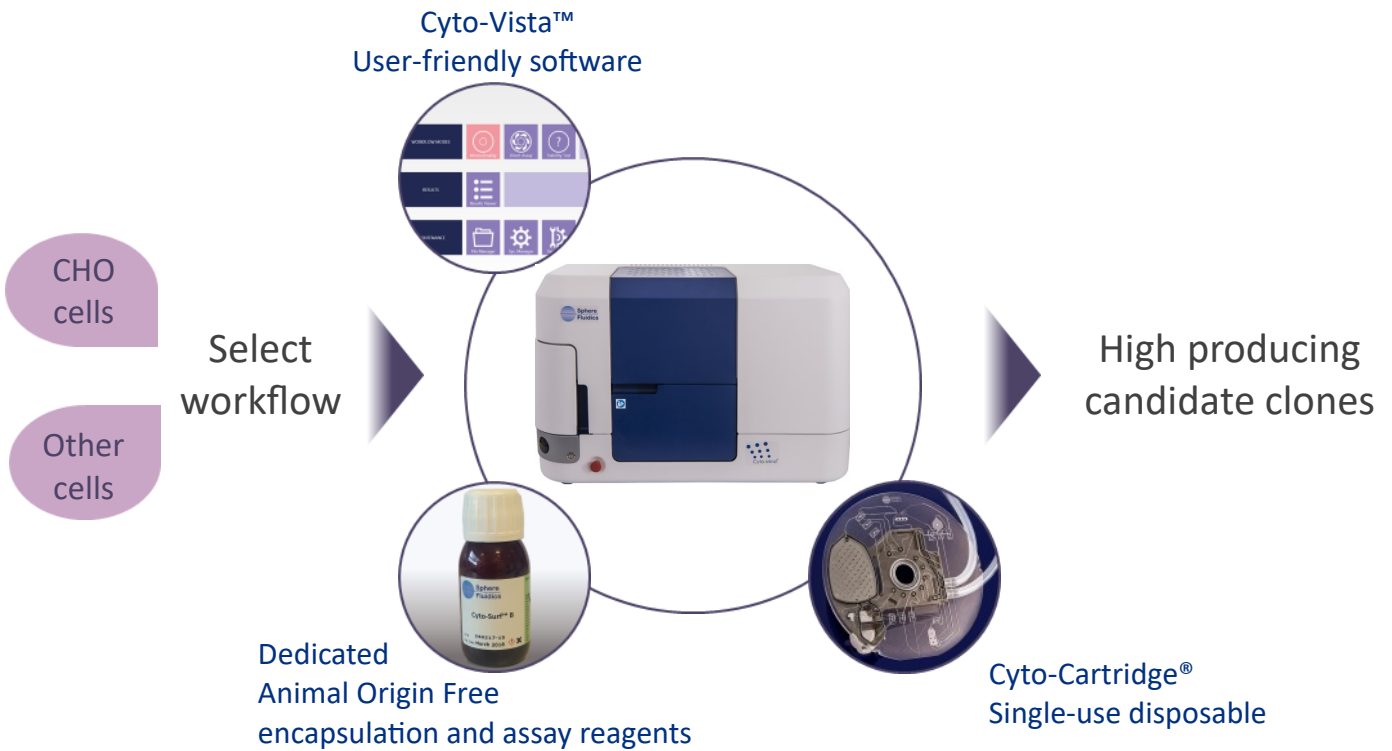
Reduce timelines. Increase screening

## Antibody Discovery



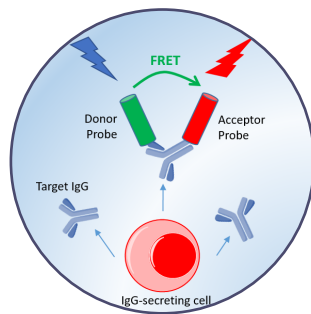
# and cell line development workflows

capability. Deliver monoclonality.



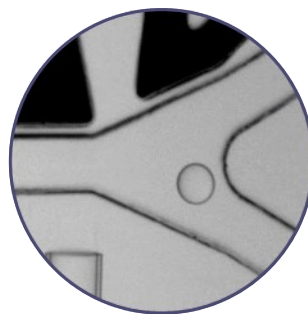
## ENCAPSULATE

Encapsulate up to 100,000 transfected single cells.



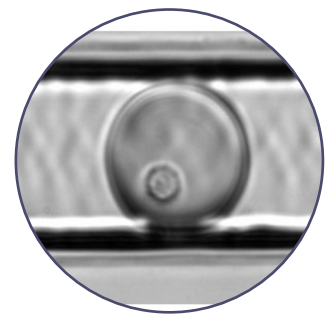
## ASSAY

Screen transfected pools for target antibody titre or analyse cell banks for earliest sign of genetic drift.



## SORT

Sort based on fluorescence to find your high producing candidate clones.



## DISPENSE

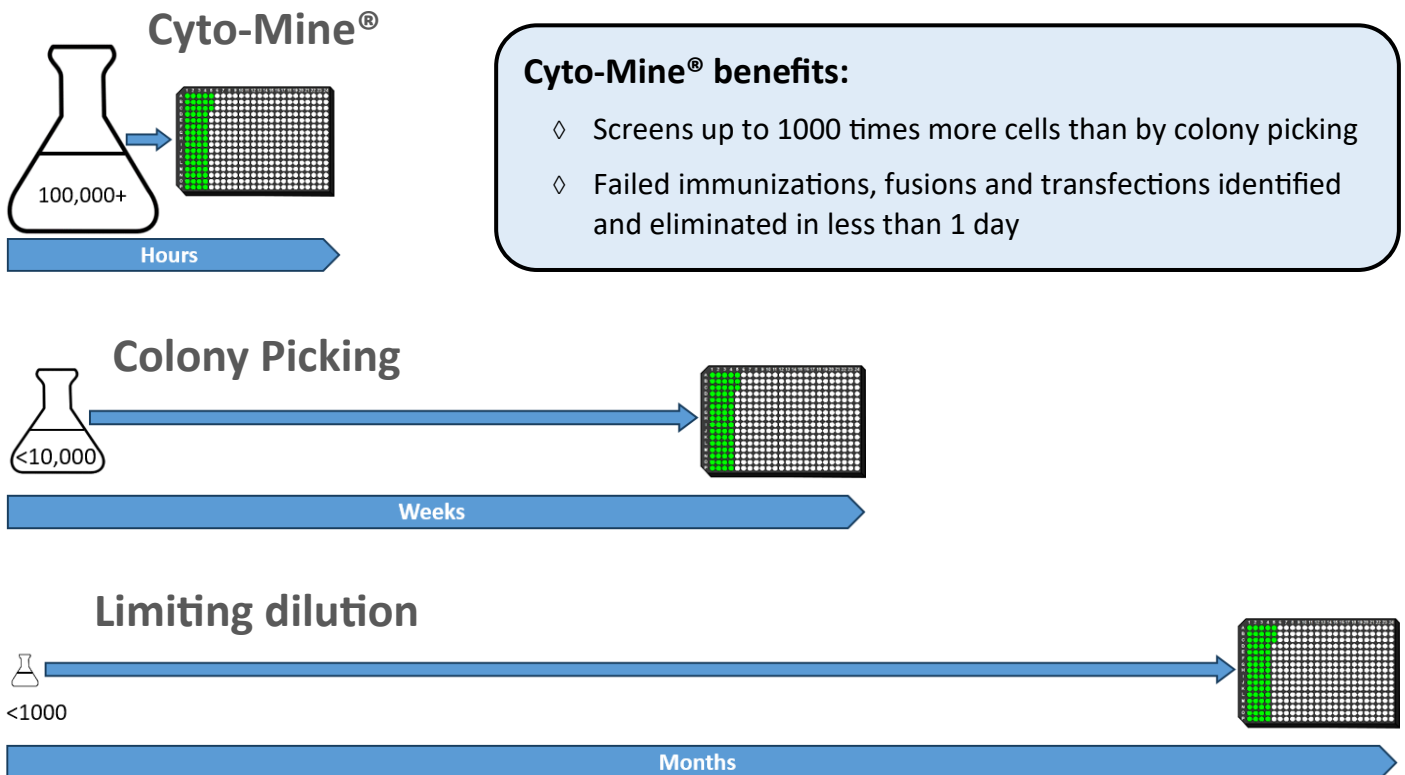
Dispense your single cells of interest into 96- or 384-microplate wells with visual proof of monoclonality.

# Screen more clones in less time

Cyto-Mine® picodroplet encapsulation technology provides a powerful new way to screen hundreds of thousands, or even millions, of cells for secreted proteins in a high-throughput manner.

This overcomes both the limitation of FACS to readily measure secreted proteins, and the inability of current secreted protein screening methods to handle large numbers of cells.

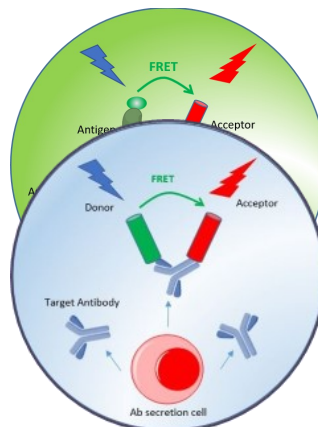
## Cyto-Mine® versus other secreted protein screening methods:



## Measure protein secreted from every cell

The Cyto-Mine® incubation and sort functions enable a miniaturized assay of target protein secreted from hundreds of thousands of individual cells.

- ◇ Detection reagent simply added to cells by operator prior to run
- ◇ FRET-based homogenous assay
- ◇ Assay time of just 30 mins to 2 hours
- ◇ Cyto-Mine® automatically incubates, assays and sorts



### Antigen-specific assay:

- ◇ Hybridoma and B cell screens

### IgG secretion assay:

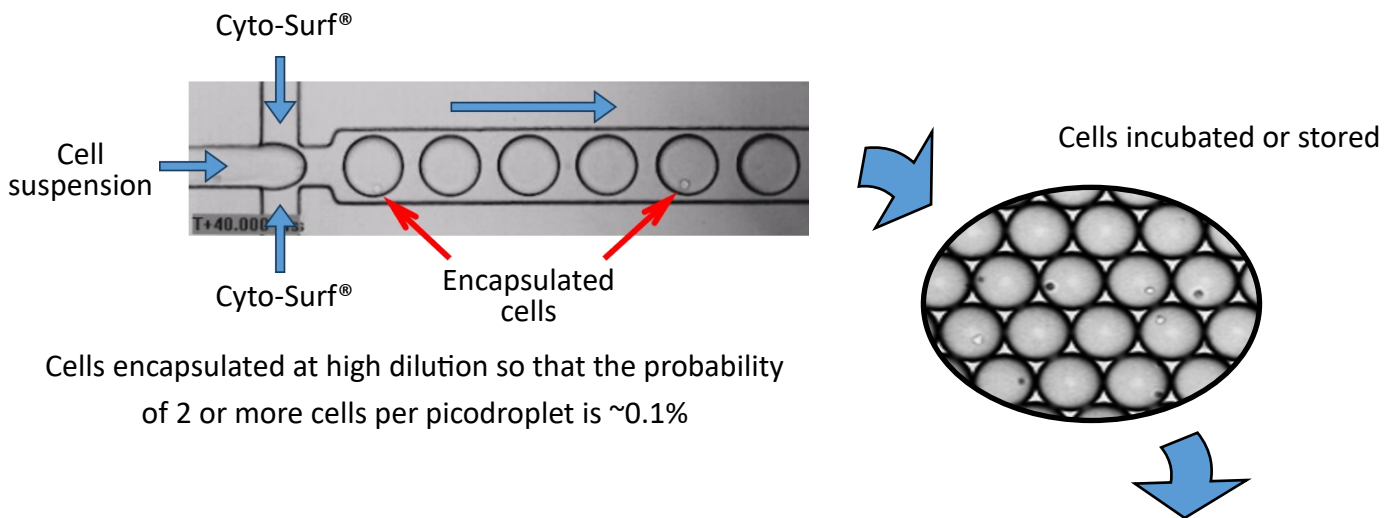
- ◇ Productivity screen

### Customized assays:

- ◇ Functionality
- ◇ Post-translational modification
- ◇ Reporter

# The confidence of a single-cell progenitor

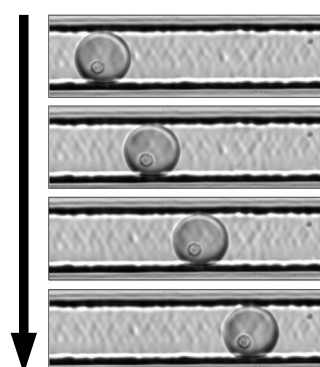
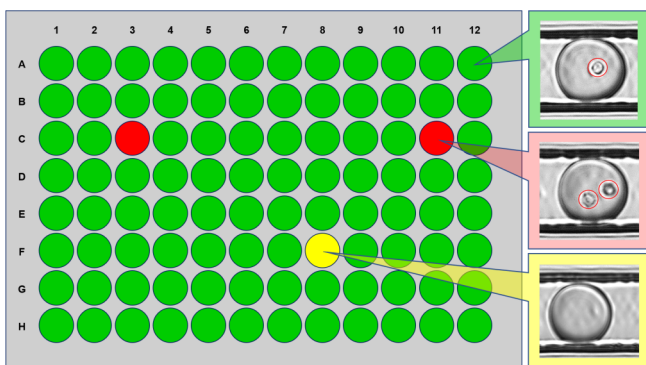
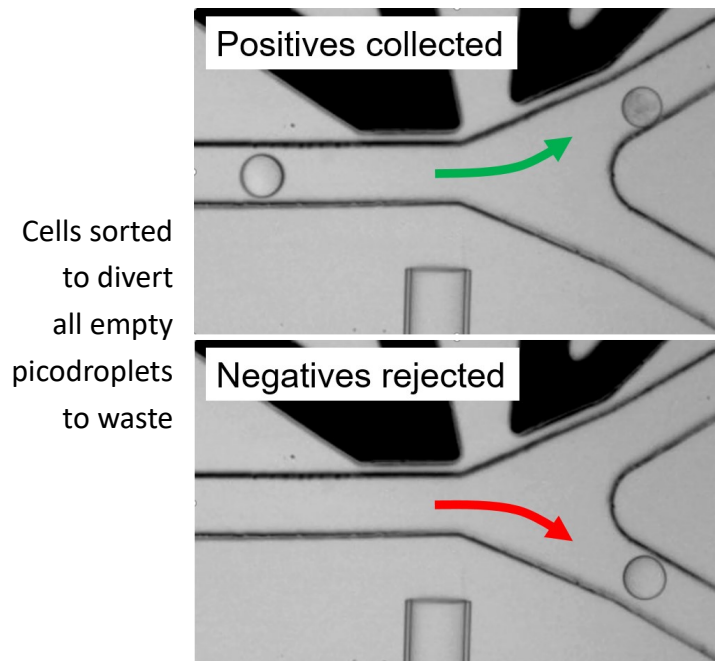
Cyto-Mine® mono-clonality assurance technology enables single cells to be gently isolated and collected to microplates with visual proof of single cell status.



Cells encapsulated at high dilution so that the probability of 2 or more cells per picodroplet is ~0.1%

## Cyto-Mine® benefits:

- ◇ Automated isolation of verified single cells
- ◇ Documented visual evidence of mono-clonality
- ◇ Robust outgrowth of cells due to encapsulation and gentle processing
- ◇ End to end sterility with disposable consumables

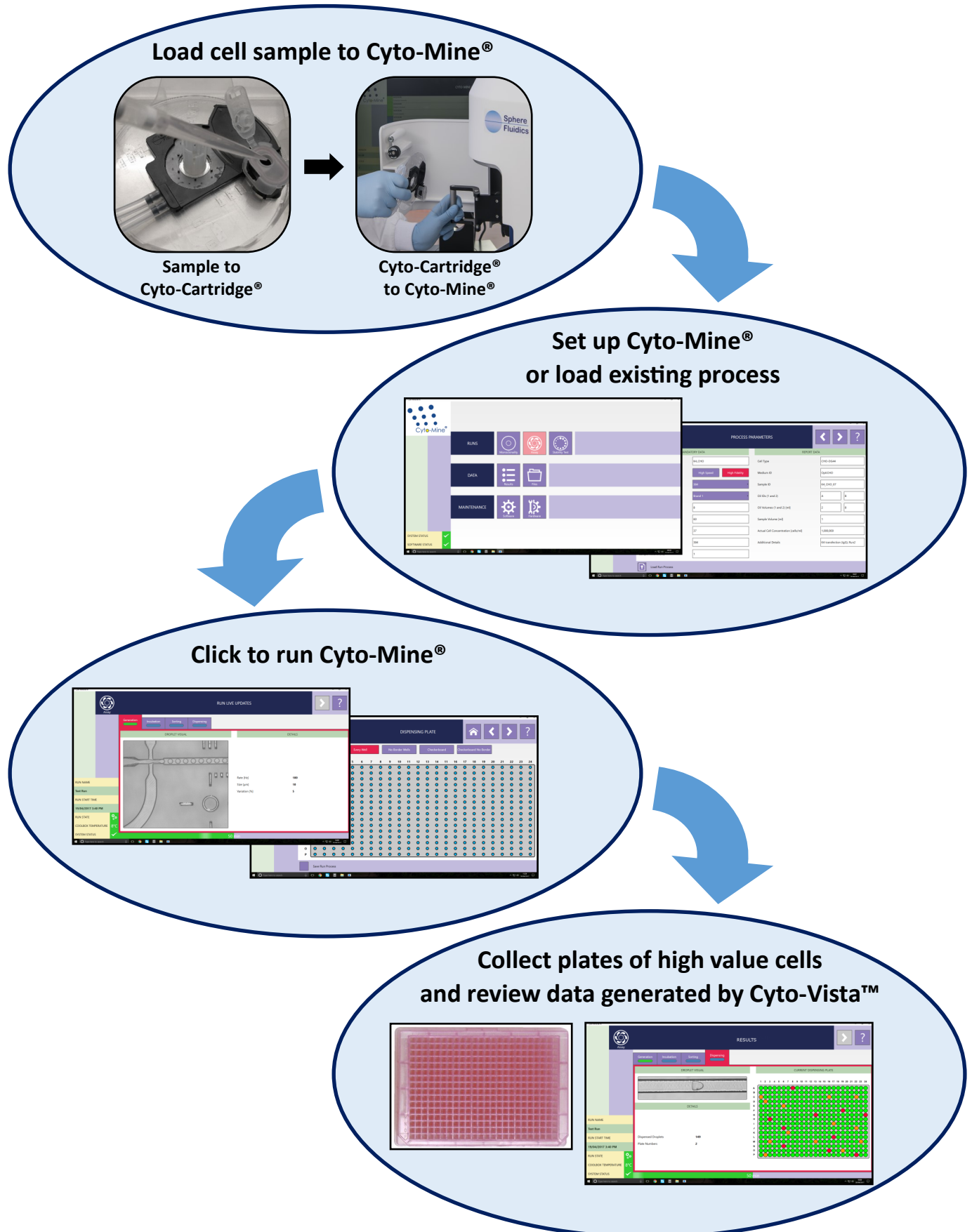


Visual verification by ultra-high speed, multi-frame optical imaging immediately prior to dispense confirms the presence of a single cell per picodroplet

Cells gently dispensed to pre-filled 96- or 384-well microplates, and detected cell number annotated on interactive well map in Cyto-Vista™ software

# Integrated screening, sorting, isolation and clonality verification at the click of a button

Cyto-Vista™ software has an intuitive user interface to guide the user seamlessly through the set-up process.





# Specifications

SYSTEM SPECIFICATIONS	
Weight	85 kg (187 lbs) - Boxed 110 kg (242 lbs)
Dimensions	860 mm x 566 mm x 463 mm (width x height x depth)
Voltage [frequency]	110 V (min) to 240 V (max) [@ 50 Hz / 60 Hz]
RUN SPECIFICATIONS	
Sample input method	Loaded into single-use disposable Cyto-Cartridge®
Sample input format	Mammalian cells in cell culture medium
Workflows (operation modes)	Monoclonality Assurance; Direct Assay; Cell Line Stability
Cyto-Cartridge® incubation temperature	8-37°C
Destination plate capacity	Plate-by-plate or stacker option
Dispensing speed	1 well per second
Run time	2-7 hours (protocol dependent)
Containment and sterility	Requires biological safety cabinet
DETECTION	
Detection system	Laser-Induced Fluorescence (e.g. fluorophores, FRET)
Excitation wavelengths	488 nm
Detection wavelengths *	520nm & 620nm (peak detection wavelengths)
Camera	High-speed CMOS
PC	
Computer	Dell Precision Tower 5810 (8 GB RAM; 500 GB hard drive) or equivalent
PC operating system	Microsoft Windows 7 Professional
Monitor	Colour LCD (21")
External connections	4 USB; 1 Ethernet
Cyto-Mine® data formats	.XLS; .BMP; .PDF; .XML
SOFTWARE SPECIFICATIONS	
System control software	Cyto-Vista™ software suite
Monoclonality verification	High-speed CMOS image capture and processing
Data tracking	On screen data point hyperlinking
Data fidelity	Locked run data with time stamp editing
WORK ENVIRONMENT	
Clearance	30 cm
Humidity	30 - 80%
Operating temperature	21°C ± 5°C
Site preparation	See the Cyto-Mine® System Site Requirements Guide
CONSUMABLES	
Microfluidic biochips	Cyto-Cartridge®
Specialist chemicals	Cyto-Surf® Solutions (250ml bottles)
Microplate compatibility	96- and 384-well. All major SBS format plates.

\* Custom filter configurations are available; please note these must be specified at the point of purchase. Contact us at [Sales@spherefluidics.com](mailto:Sales@spherefluidics.com) for further information.

# Cyto-Mine®

The Single Cell Analysis and Monoclonality Assurance System

Code	Product Ordering Information
S003	Cyto-Mine® System
C301	Cyto-Mine® Consumables Suite
C302	Cyto-Cartridge® Pack of 5
C303	Cyto-Surf® A (250ml)
C304	Cyto-Surf® B (250ml)



**For further Cyto-Mine® reading:**

- ◇ Application Note 01: IgG Secretion Assay
- ◇ Application Note 02: B Cell & Hybridoma Mining
- ◇ Application Note 03: Monoclonality Assurance

Notes:

Sphere Fluidics Ltd is ISO 9001:2015 accredited.

Cyto-Mine®, Cyto-Cartridge® and Cyto-Surf® are registered trademarks and patented technologies of Sphere Fluidics Ltd.

All Cyto-Mine® components, the Cyto-Cartridge® and Sphere Fluidics' supplied chemicals and bioreagents are Animal Origin Free and GLP-compliant.

For research and development purposes only.

Product specifications subject to change without notice.

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## Contact us

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