

**LEVITAS** BIO

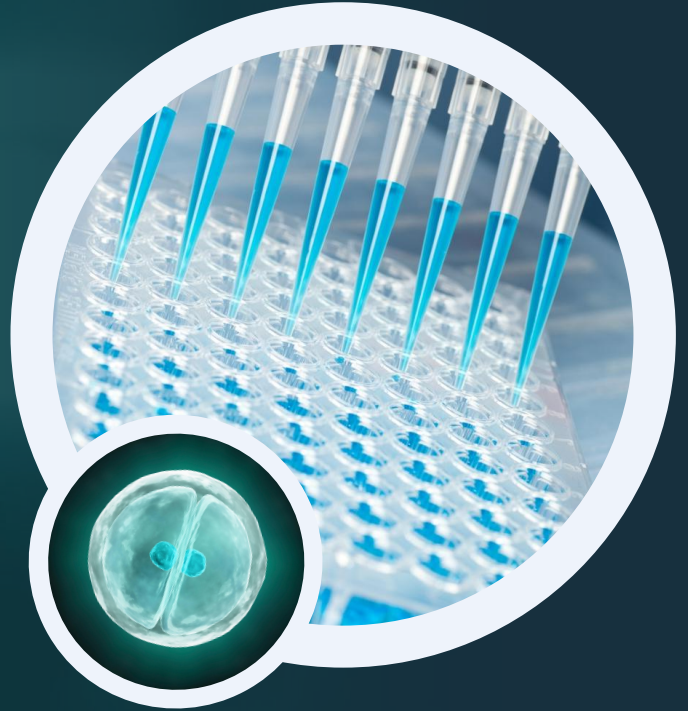
# Discover More, Spend Less

**LeviCell Array Systems**

Scalable Cell Enrichment & Washing Solutions

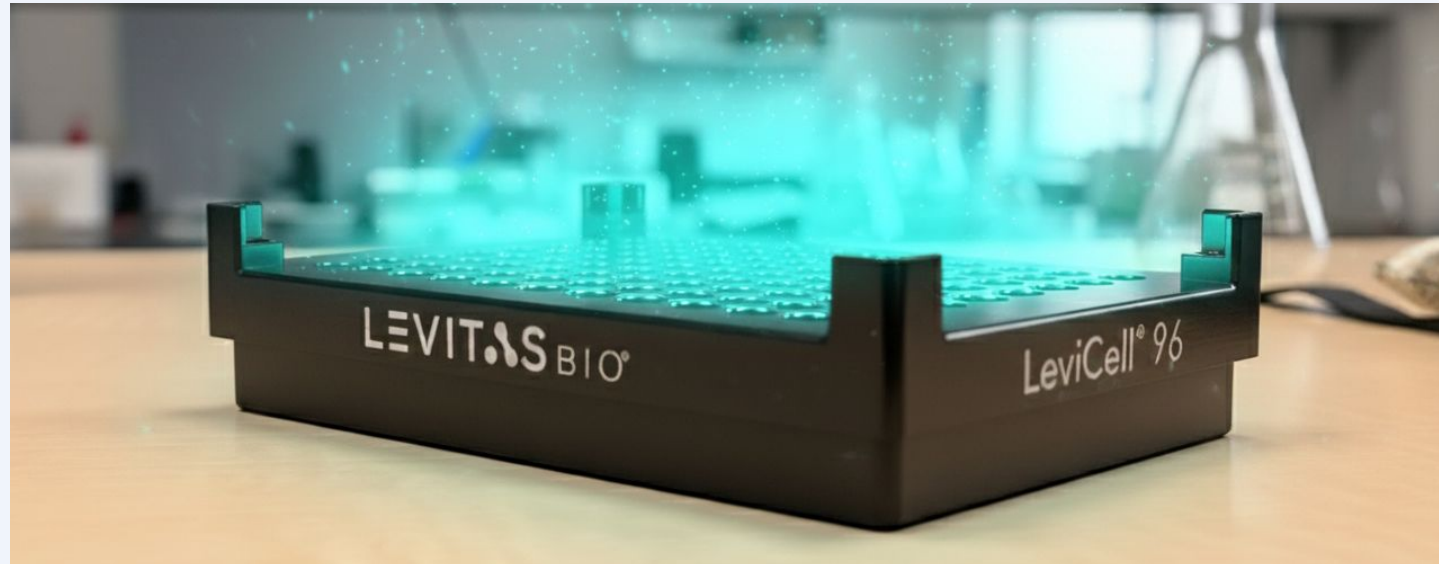
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Jan 2026



# Scalable Cell Enrichment & Sample Processing Solutions Starts Here

## LeviCell® Array Systems



Selective Arrayed Levitation Technology (SALT™) delivers label-free, flexible throughput cell enrichment and washing across every scale



# The LeviCell Advantage



## All-in-One Workflow

Simultaneous live cell enrichment and depletion of debris, RBCs, CD45 and myelin.



## Scalable Solutions

From pilot studies to high-throughput, we have the right fit for you.



## Label-Free & Gentle

Preserve cell viability and phenotype integrity.



## Streamlined Workflow

Exponential hands-on time and step savings.



## Exceptional Purity

Isolate target cells with unparalleled precision.



## Flexible Input

Works with cells, nuclei, and organoids.



# Your Research. Your Scale. Our Technology.

## LeviCell 12

Quality for  
Every Insight

- 12 samples / run
- Fast, simple, low-cost
- Fully upgradable

### > Best For

- Lower-throughput studies
- Individual experiments
- Pilot & optimization studies
- Flexible sample inputs

## LeviCell 96

High-Throughput  
Uncompromising Quality

- 96 samples / run
- Enrichment and cell washing
- Sample flexibility

### > Best For

- Medium to high-throughput studies
- Single-cell genomics
- Standardized assays
- Running sample replicates

## LeviCell Pro

Integrated  
Automation at Scale

- Integration into existing liquid handler
- Walk away automation
- Full flexibility

### > Best For

- Large-scale studies
- Fully automated labs
- Leveraging existing liquid handling capabilities
- Maximizing walk-away time



# 100x throughput. 10x cheaper. Zero compromises



## 100X Throughput

Fully automated 96-well workflow

- 1-96 samples at a time
- Parallel enrichment and targeted depletion
- SBS format, automated workflow



## 10X Cheaper

\$10 per sample all in

- Includes live cell enrichment and debris removal
- No additional steps required
- Reproducible results well x well



## The Payoff

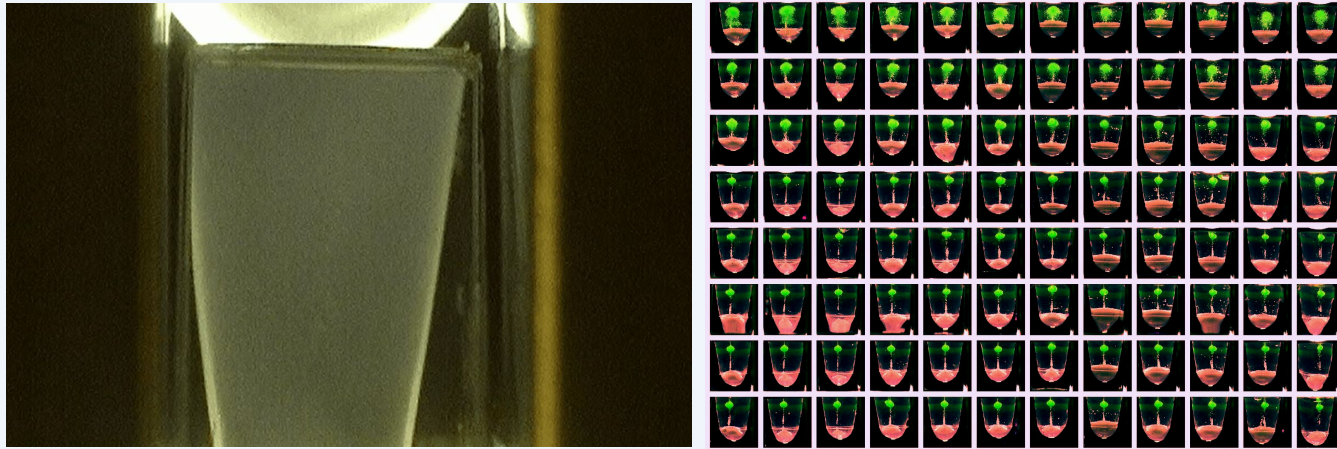
Samples to insights  
Exponentially faster. Cheaper. Better.

- **Exponential** returns on ROI
- **Scale up** like never before
- **Leapfrog** competition with better data models

Are you ready for the sample prep revolution?



# Innovative Technologies that Deliver Sample Prep at Scale



From N of 1 to 96, **LEVITAS** BIO® Enables:



Higher Throughput



Lower Cost



Better Data





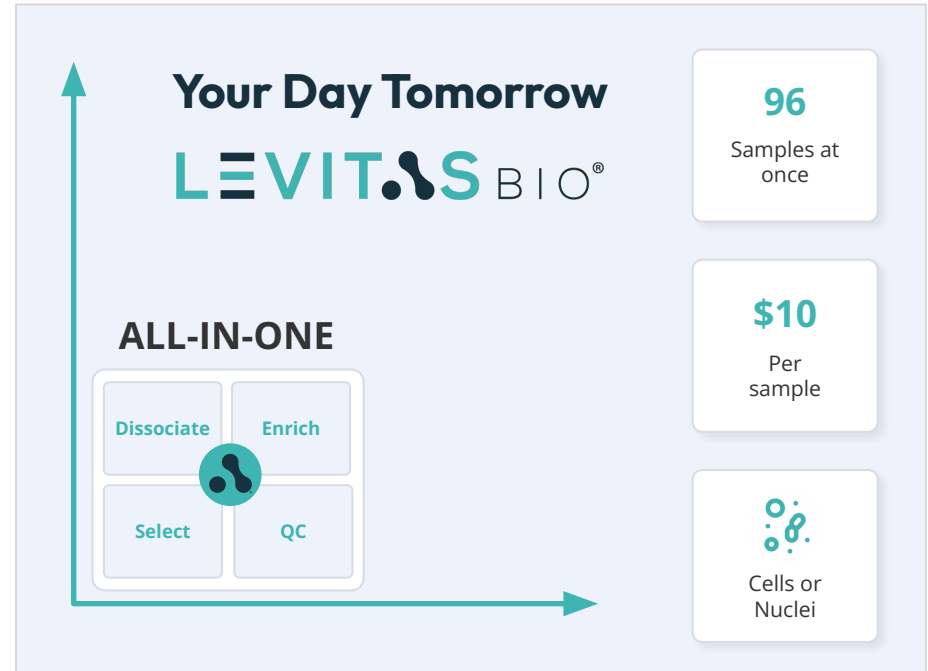
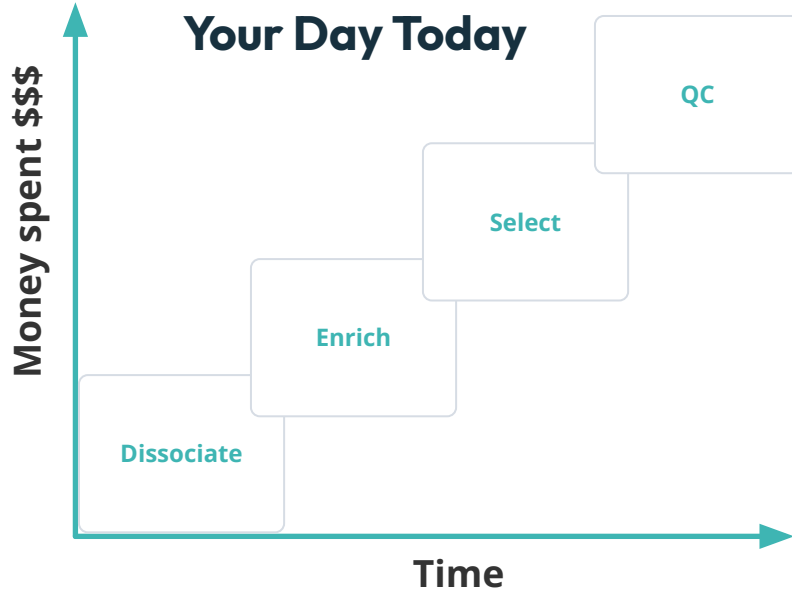
100x throughput



10x lower costs



Superior data/efficiency



# Levitation is Revolutionizing Research Around the World

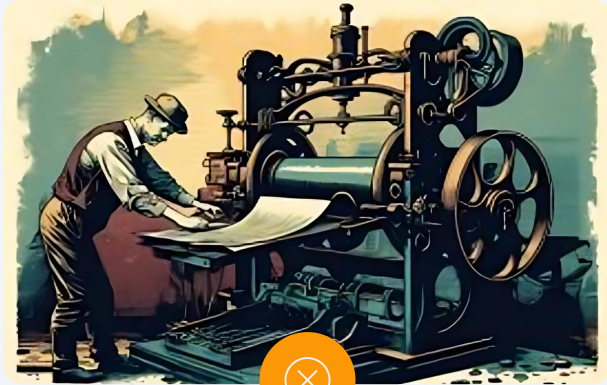
## Pharma/Biotech



## Academia



# Today's Cell Processing Methods are Manual, Slow, and Linear



**Manual**

**Linear Processing**

**Single Functionality**

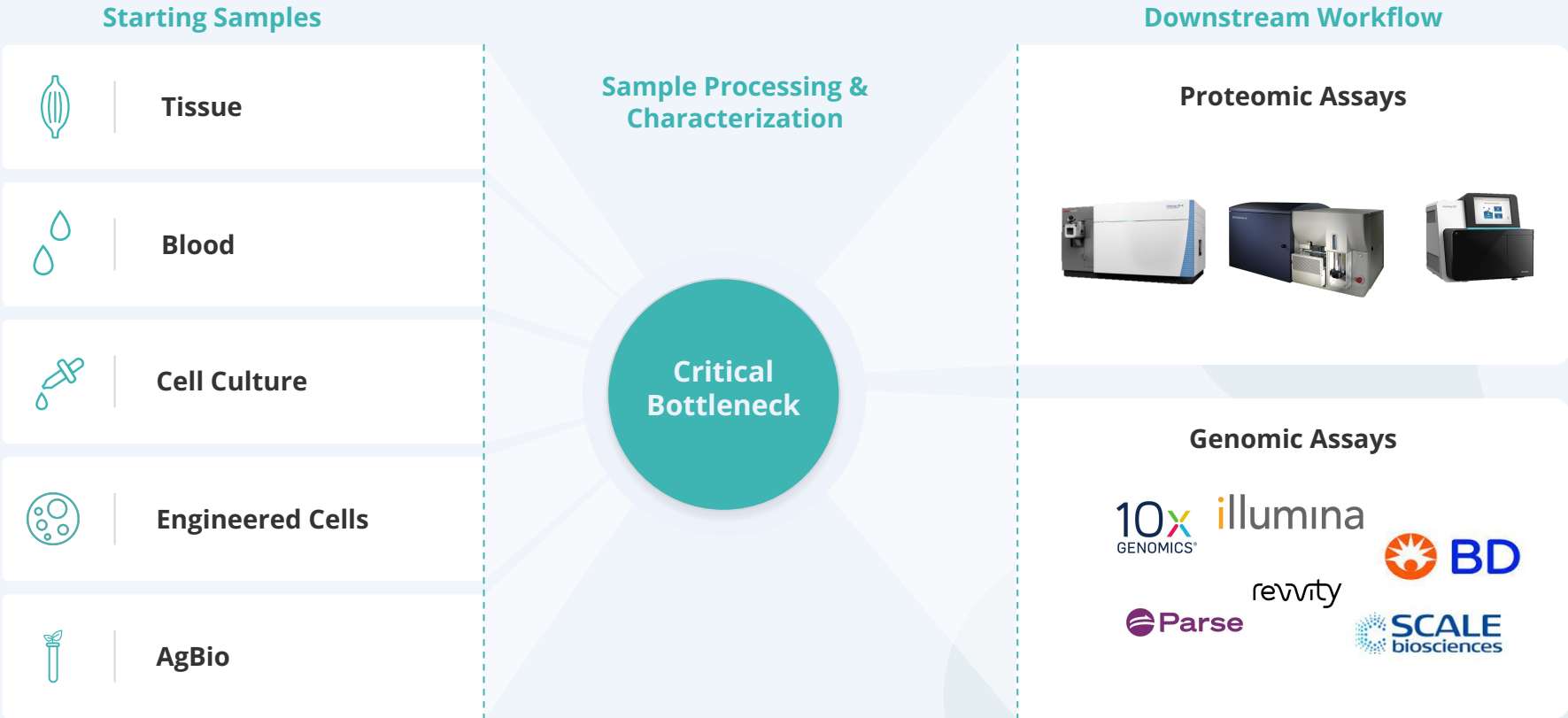


**Automated**

**Parallel Processing**

**Multi-functional**

# Sample Processing is Now a **Key Bottleneck** in Large Datasets



# LeviCell<sup>®</sup> Array System - Fast, Simple, Flexible

Unmet Need	Current	LevitasBio	Key Benefits
Sample Flexibility	X	✓	<ul style="list-style-type: none"><li>• Non-adherent and adherent cells</li><li>• From bacteria to organoids</li><li>• Debris and contaminant tolerant</li></ul>
Unbiased cellular profile and response	X	✓	<ul style="list-style-type: none"><li>• No stains or markers</li><li>• No high pressures or microfluidics</li><li>• Maintains activation and expression states</li></ul>
Ability to multiplex with LeviSelect depletion assays	X	✓	<ul style="list-style-type: none"><li>• Deplete unwanted cell populations</li><li>• Enrichment and depletion in one assay</li><li>• Workflow consolidation saves time/money</li></ul>



# Key Applications - Automated SBS Plate Workflow



## Cytometry

### Incorporates pre-sorting enrichment

- Debris removal
- Live cells
- Targeted depletion

### Cell washing & background removal

- Unbound antibody
- Dyes



## CITE-Seq

### Pre-encapsulation enrichment

- Debris removal
- Live cells
- Targeted depletion

### Cell washing & background removal

- Unbound antibody



## scRNA-Seq

### Pre-encapsulation enrichment

- Debris removal
- Live cells
- Targeted depletion



## 3D Culture

### Organoid & spheroid enrichment

- Debris removal
- Dissociated or whole 3D culture enrichment
- Multi-factorial workflows



# Revolutionary Selective Arrayed Levitation Technology (SALT™)



Originally invented by  
George Whitesides  
at Harvard



George  
Whitesides



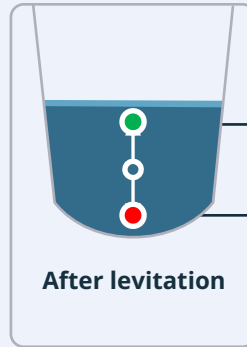
Delivering on 8  
years of  
development by  
bringing value to  
high throughput  
users



Proprietary High-Density  
Levitation Array enables  
gentle isolation and  
characterization of cells  
without the use of any  
labels or markers



Example  
Starting  
Position



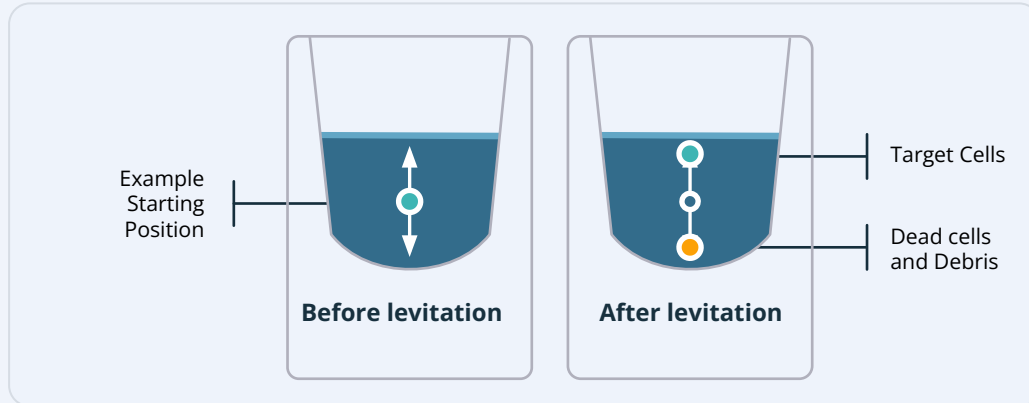
Target Cells

Dead cells  
and Debris



# Revolutionary Selective Arrayed Levitation Technology (SALT™)

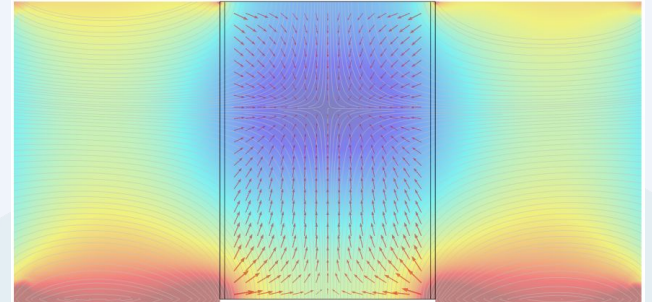
The **LeviCell® 96 Array** represents a precision-engineered advancement in magnetic levitation technology. This automation-ready platform replaces traditional mechanical sorting with a **physics-based, density-discriminating levitation array**, enabling **high-throughput, label-free cellular separation** across 96 parallel wells. Each array delivers consistent, reproducible fractionation of viable cells and subcellular structures—**without compromising cell integrity or downstream data fidelity**.



# Revolutionary Selective Arrayed Levitation Technology (SALT™)

Each LeviCell 96 Array is a **complex magnetostatic architecture**, designed and calibrated to achieve unprecedented field uniformity and repeatability.

- Contains **hundreds of custom-engineered permanent magnets**, individually characterized for magnetic flux density and polarity balance.
- **Precision alignment and calibration** deliver magnetic-field uniformity within  $\pm 10 \mu\text{m}$  across the 96-well plane—critical for maintaining levitation equilibrium consistency across all channels.
- The **design, calibration, and manufacturing processes** required goes far beyond any generic plate-based magnetic array, integrating custom metrology, micro-machining, and automated QA validation pipelines.
- The result is a **high-stability levitation environment**, seamlessly integrated with robotic liquid-handling systems and optical detection subsystems, forming the core of SALT™ performance.



# The Levitation Solution – A Revolutionary Workflow

## Add Levitation Agent

 **5** min

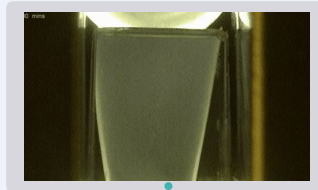
- Levitation Agent dispensed into up to 96 wells
- Levitation begins on SALT Array
- Assay of interest added, for interaction studies



## Levitate

 **20-40** min

- Levitation begins
- Levitation height depends on cell viability, interactions, etc.
- Results displayed (future imaging upgrade)

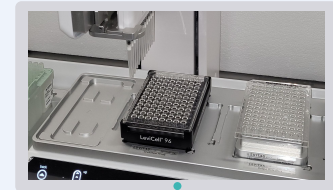


## Collect

 **5** min

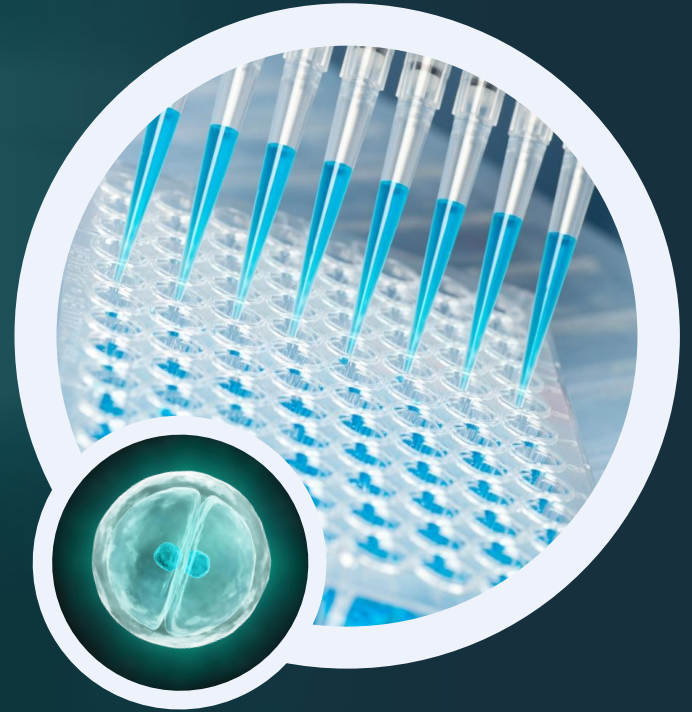
- Fraction of interest collected for downstream

Sequencing | Culturing | PDX, etc.



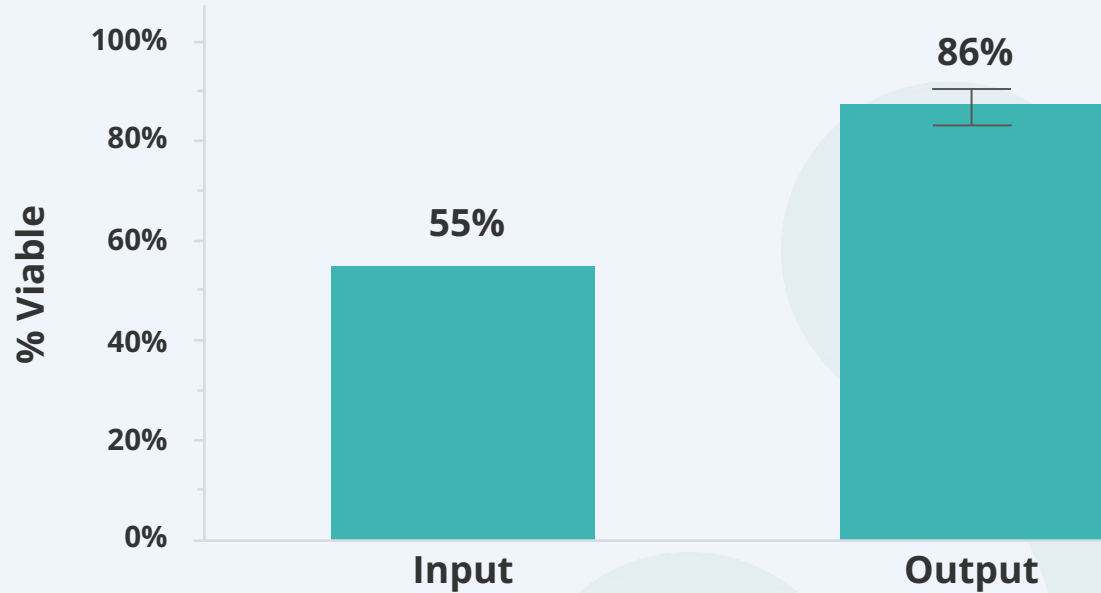
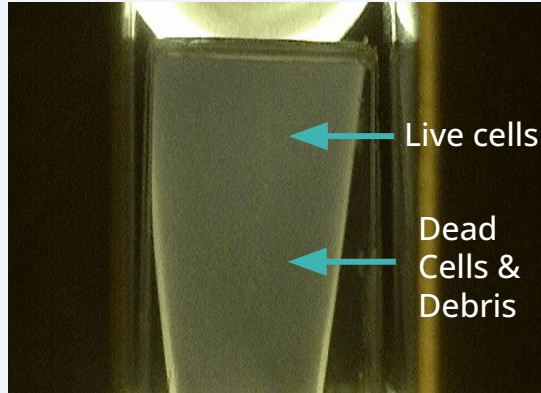
LEVITAS<sup>BIO</sup>

# Applications on LeviCell System



Viable Cell Enrichment | Cell Washing | Targeted Cell Depletion | Organoids

# Viable Cell Enrichment at Scale Without Beads or Labels

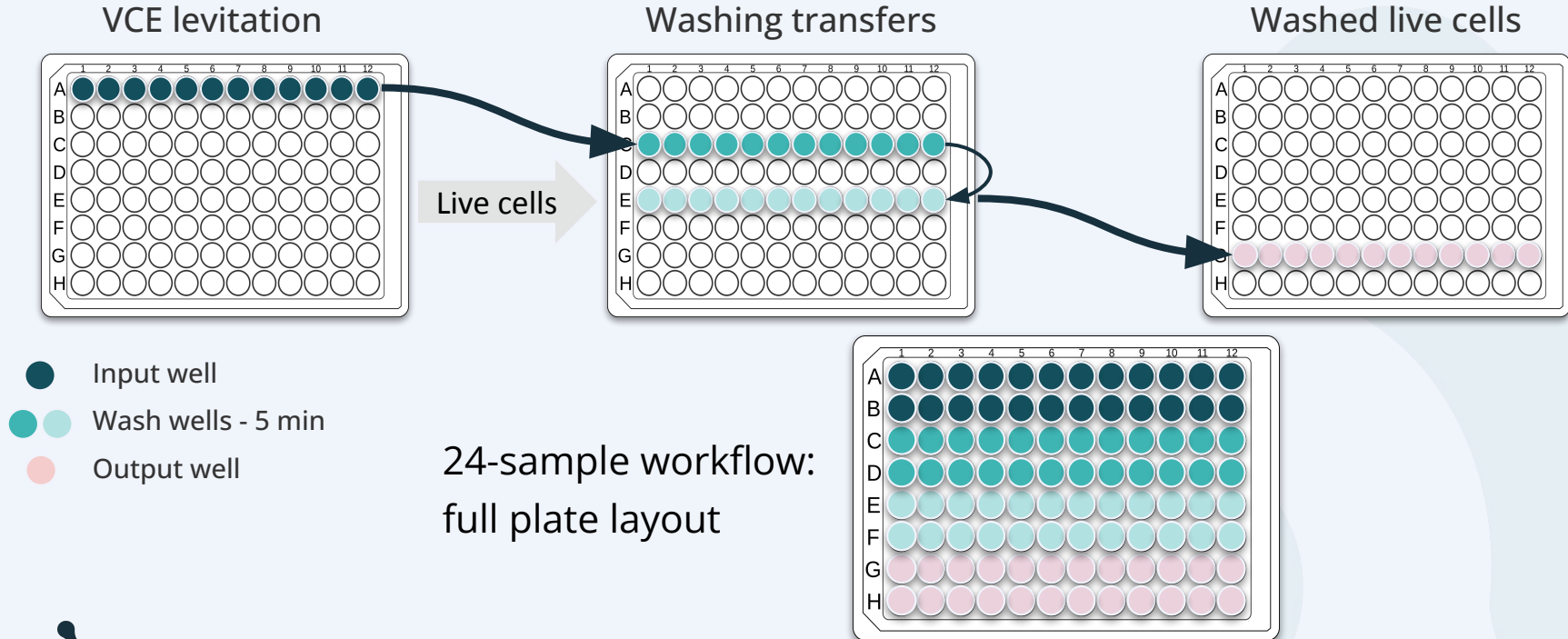


Significant viability improvement from low-quality Jurkat cell sample.  
Yields > **50%**, even from low-quantity starting input (128k cells/well)



# Innovative Cell Washing Capabilities Open More Possibilities

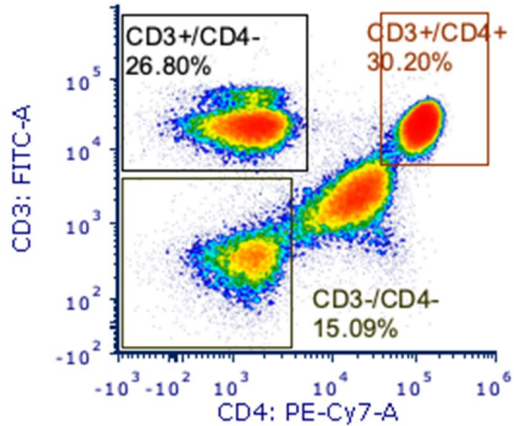
- High-throughput removal of stains, unbound antibody, and debris
- Viable cell enrichment (VCE) comes along 'for free'



# High-Throughput Washing Performance – PBMC Example

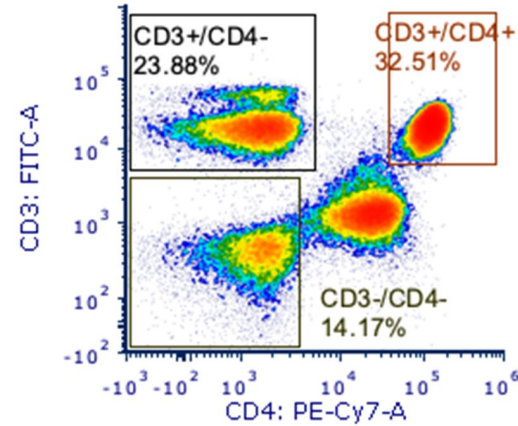
## 2X Manual washes

RW full stain 1\_Data Source - 1.fcs compensat  
Live



## Levitation

SD2 full stain 1\_Data Source - 1.fcs compensa  
Live

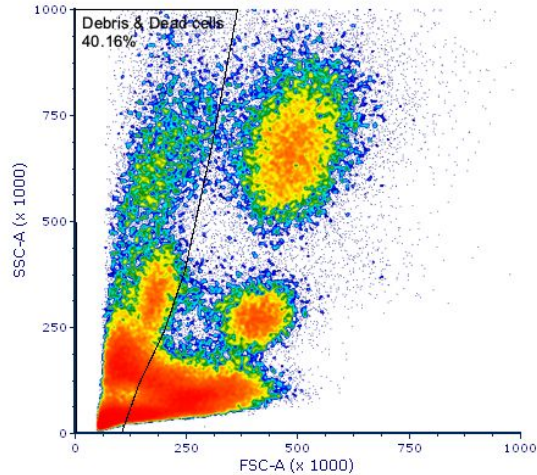


LevitasBio is able to wash away unbound cell type markers conjugated to conventional fluorescent dyes without the challenges of manual processing.

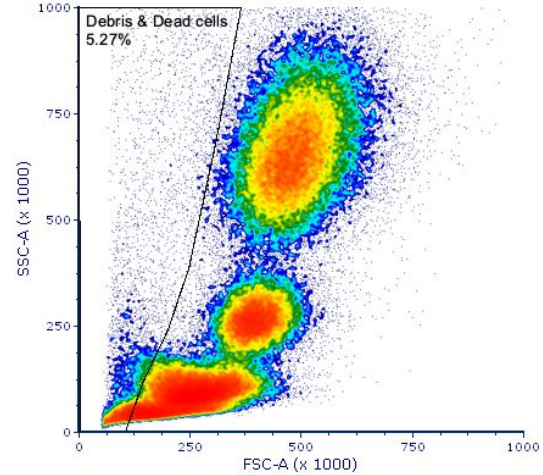


# Removes Debris as Well as Dead Cells, Still “For Free” Over Manual

After manual wash



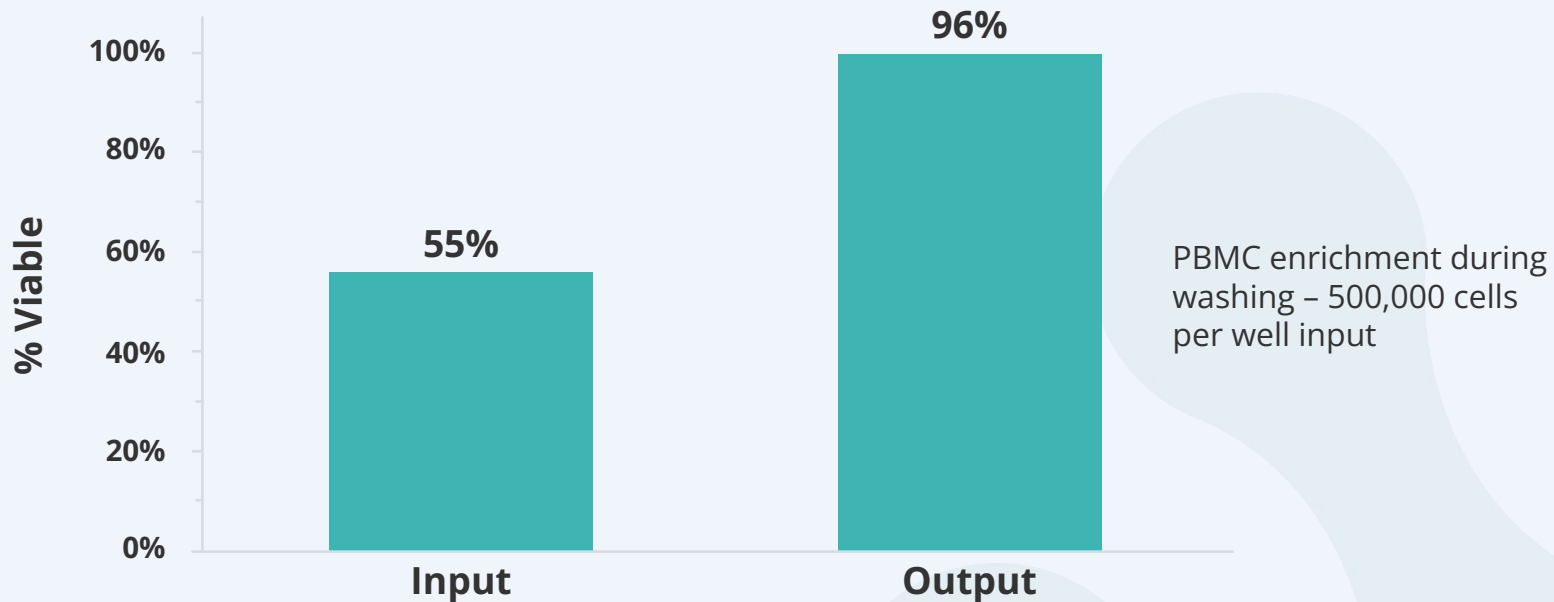
After Levitation wash



Live Cell Enrichment is intrinsically performed as part of the washing protocol – **no additional steps required.**



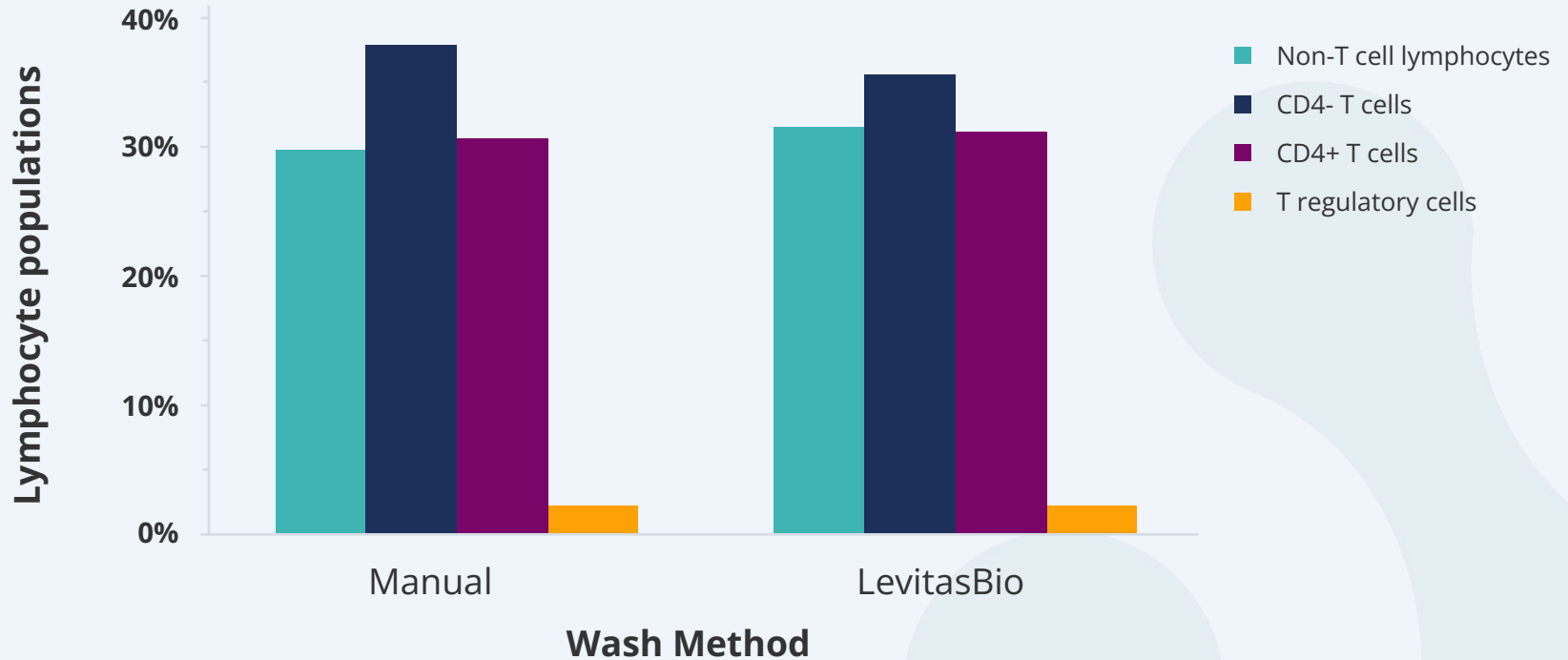
# Cell Washing is Gentle and Delivers High Sample Purity



Extremely high output purity  
Yields 77% - 87%



# Levitation Technology Does Not Alter Population Representation



# Superior Performance With Minimal Time and Effort

## Live Cell Enrichment

Yield

>50%

Viability

Up to  
99%

Debris  
Removal

60%

Levitation  
Time

40  
min

Transfer  
Steps

1

Total  
Time

45  
min

## PBMC Washing for Cytometry

Yield

>50%

Viability

Up to  
99%

Population  
Bias

NO

Time  
per  
transfer

5  
min

Transfer  
Steps

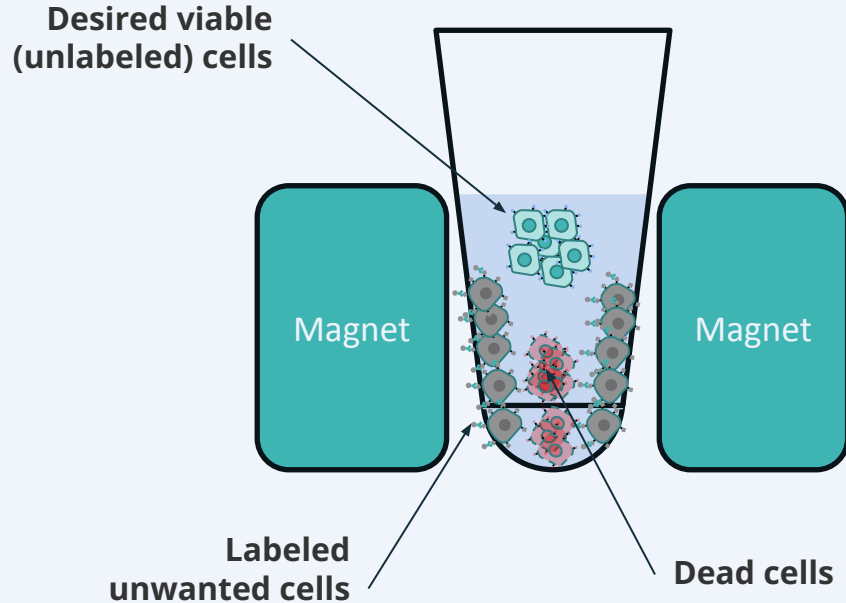
3

Total  
Time  
Incl.  
Staining

55  
min



# LeviSelect Technology + LeviCell Enable Simultaneous Removal of Unwanted Populations From Samples



- Antibody-mediated removal of unwanted cells or contaminants via negative selection
- Simultaneous target cell and viable cell enrichment

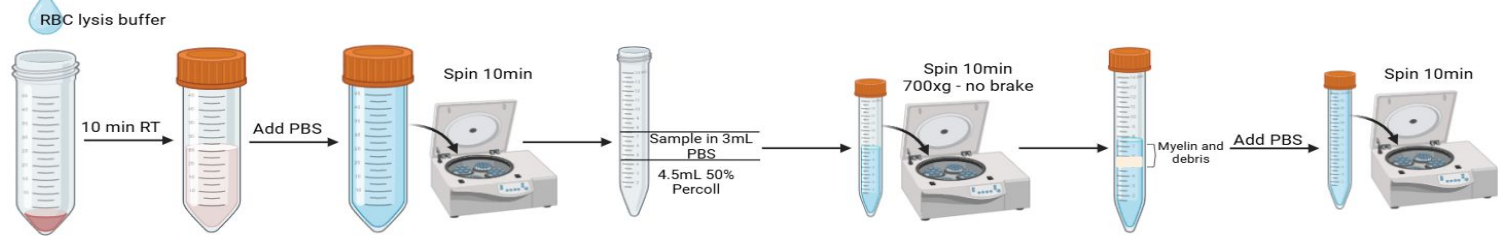
## Available Assays:

Specific immune cell enrichment  
CD45+ depletion  
Red blood cell depletion  
Myelin depletion  
"BYOA" (Bring Your Own Antibody)

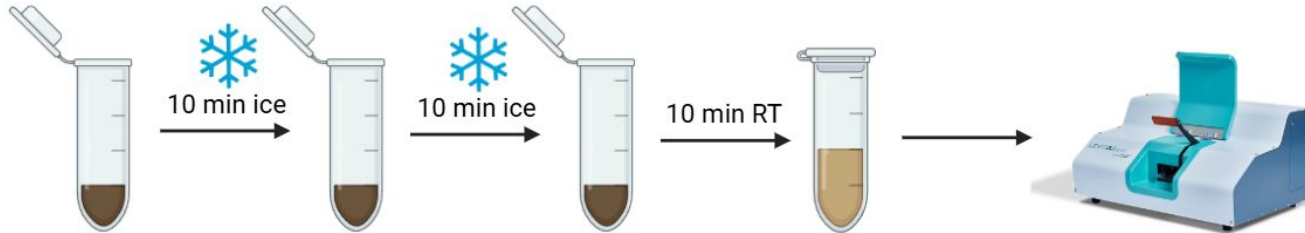


# Brain Processing: 100X Improvement Over Today

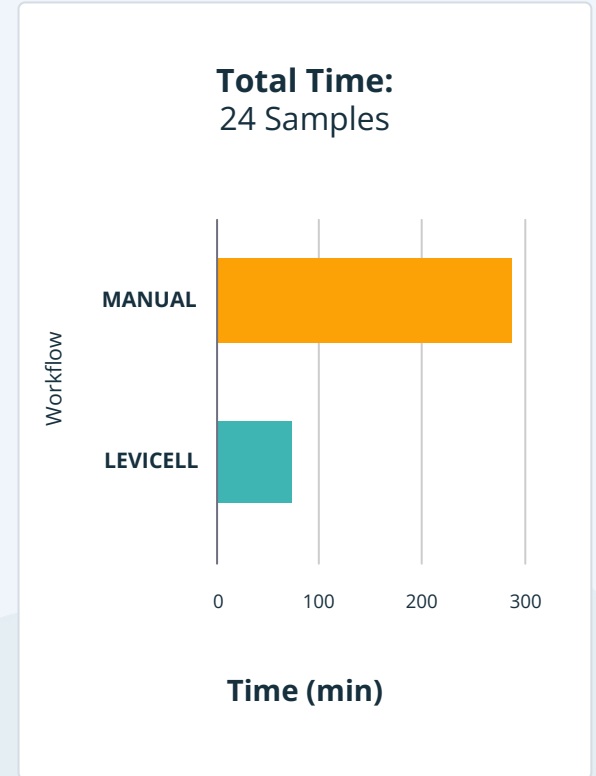
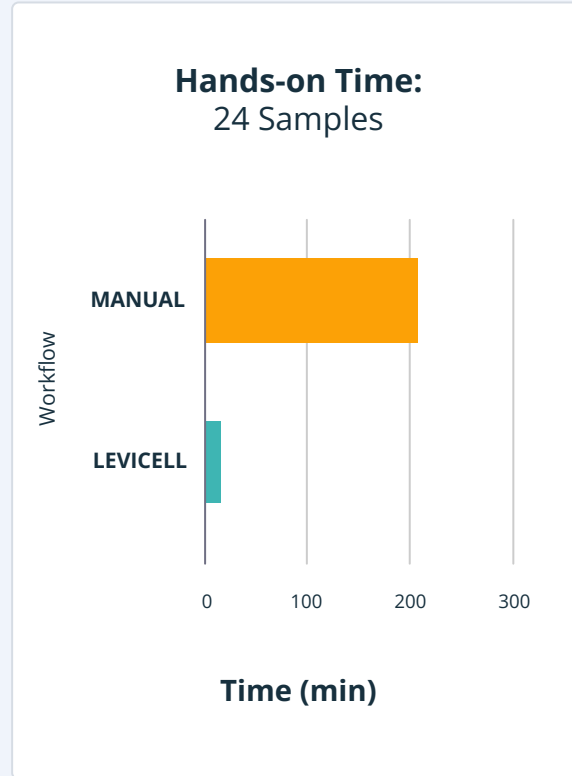
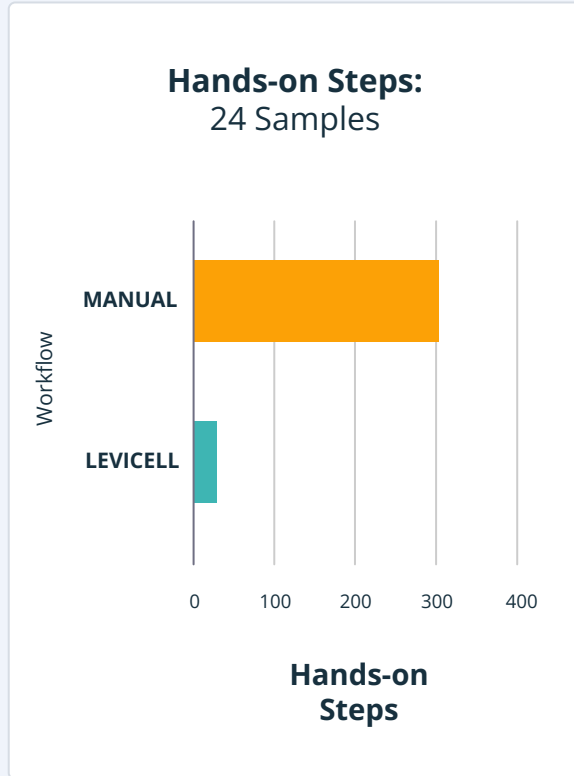
## Traditional:



LEVITAS<sup>®</sup> BIO

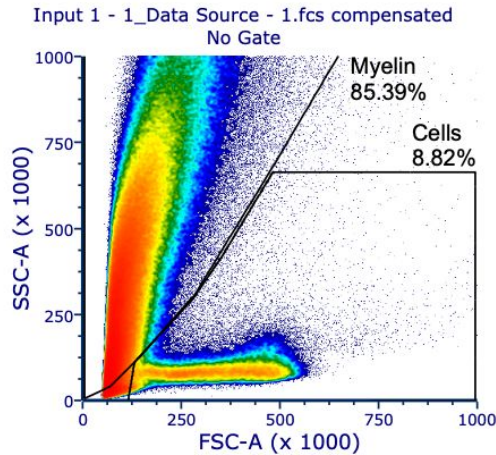


# Massive Workflow Improvements on the LeviCell System for Neuro

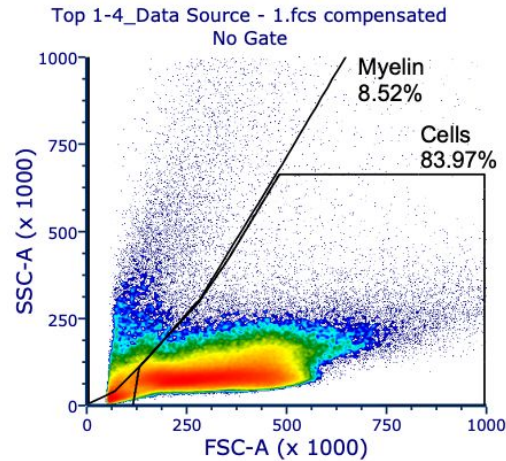


# Delivering Clean, Reliable Data - Well After Well

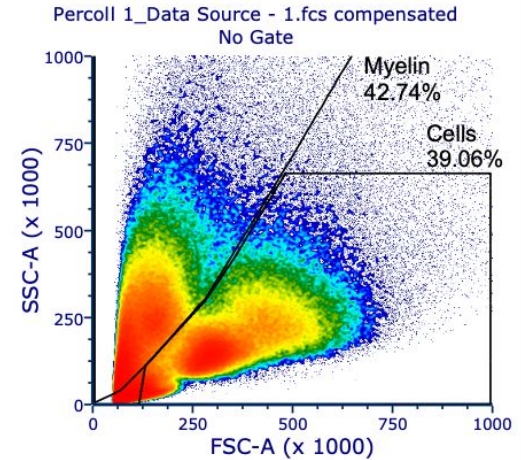
Original Sample



After LeviSelect



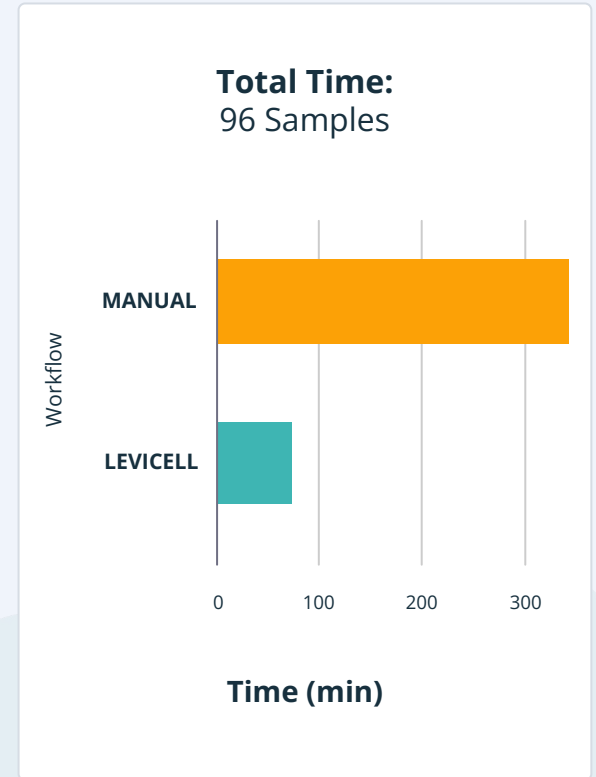
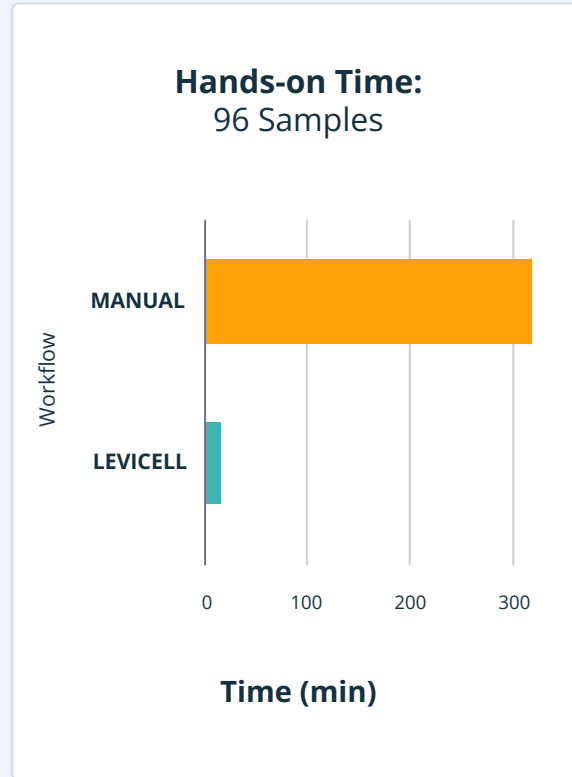
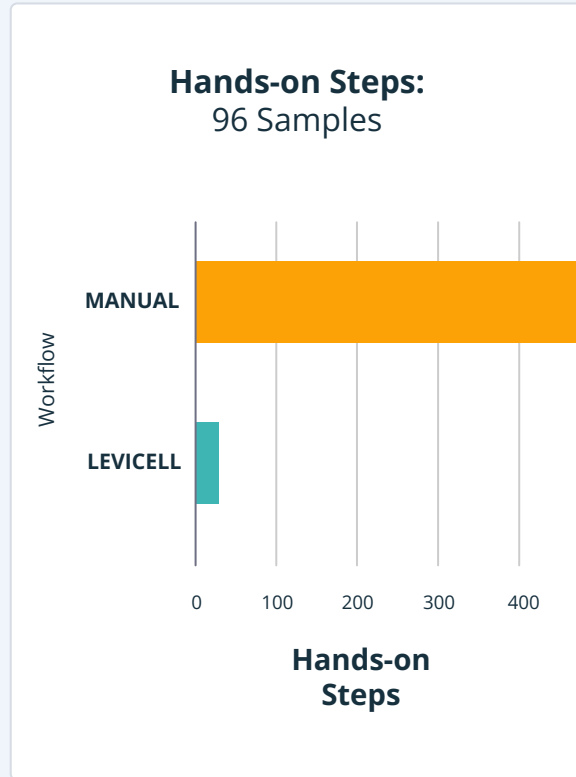
After Traditional Method



10X Less Myelin with LeviSelect than Traditional Workflow



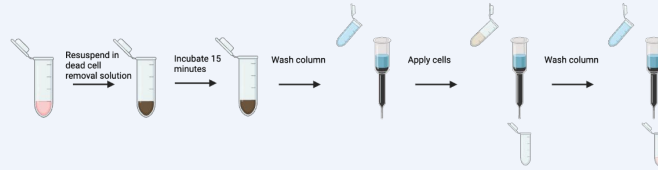
# Revolutionary Workflow Improvements for Cancer Samples



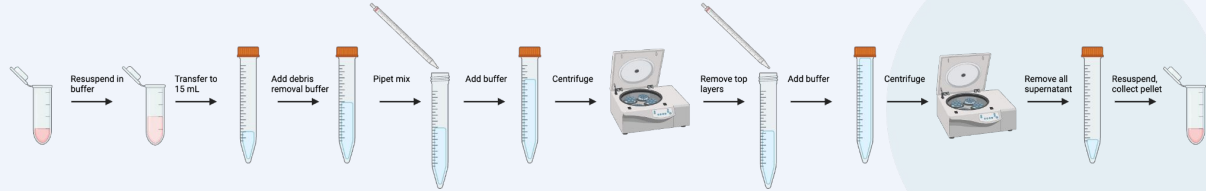
**100-fold time and step savings on the LeviCell System**

# Multiplexing Capabilities of LeviCell Facilitates Complex Workflows Like Cancer Sample Processing

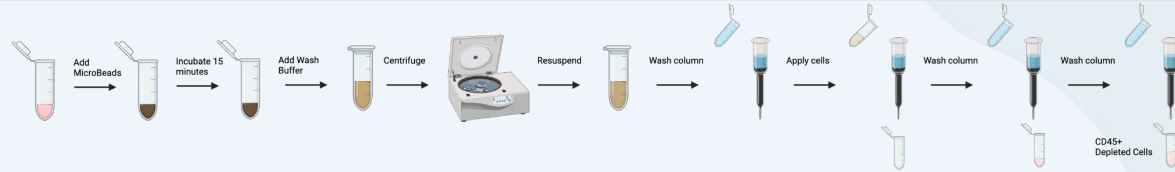
**Traditional:**  
Live cell enrichment using magnetic beads



... then debris removal using gradient centrifugation

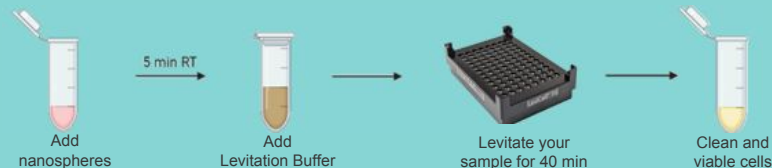


... then CD45+ depletion using another set of magnetic beads

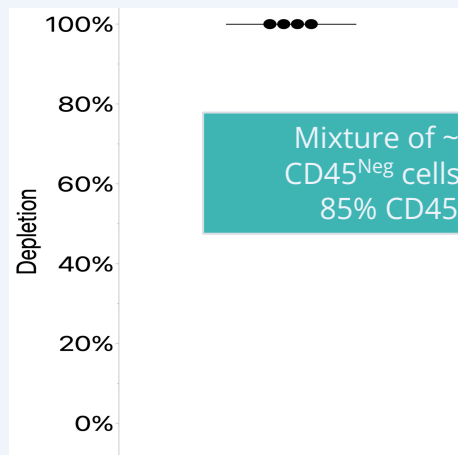
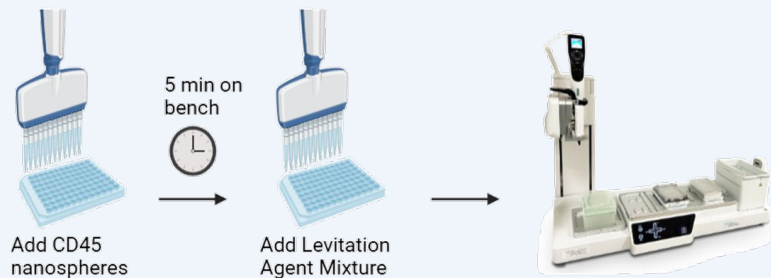


**VS**

**CD45+ Depletion & Live Cell Enrichment in One Levitation Step**

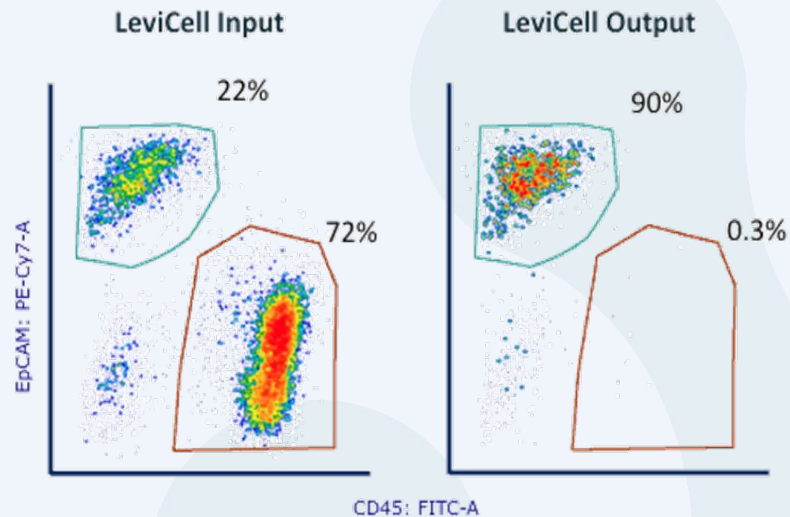


# Complete Removal of CD45+ Cells on the LeviCell System



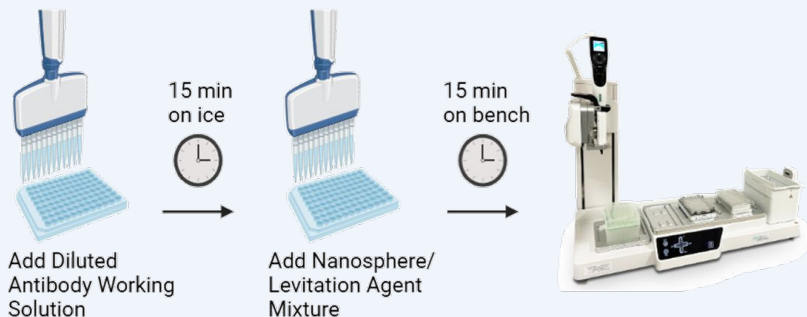
Mixture of ~15%  
CD45<sup>Neg</sup> cells with  
85% CD45<sup>Pos</sup>

Human Colorectal Cancer  
DTC\*



\*Data from LC1.0, LC96 data expected to be very similar

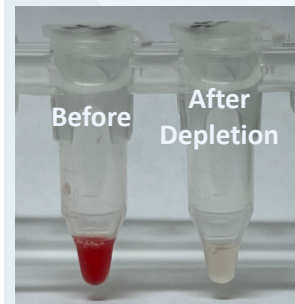
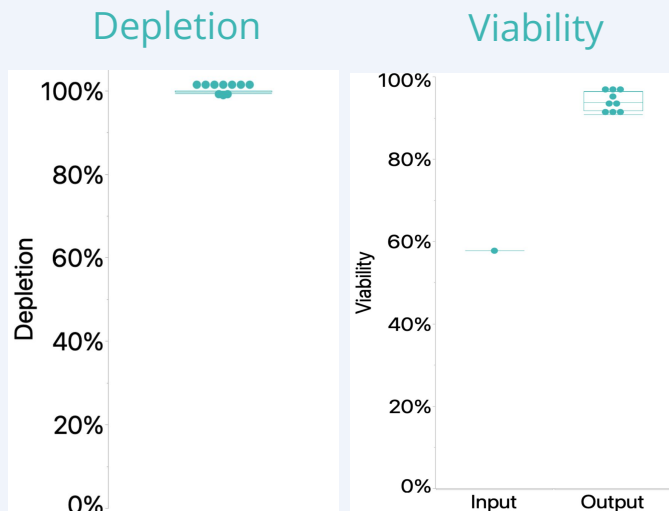
# LeviSelect Technology Delivers Nearly 100% Red Blood Cell Removal on the LeviCell System



Sample consists of ~60% viable cells contaminated with 99% red blood cells

>99.4% of the RBCs are removed post-enrichment

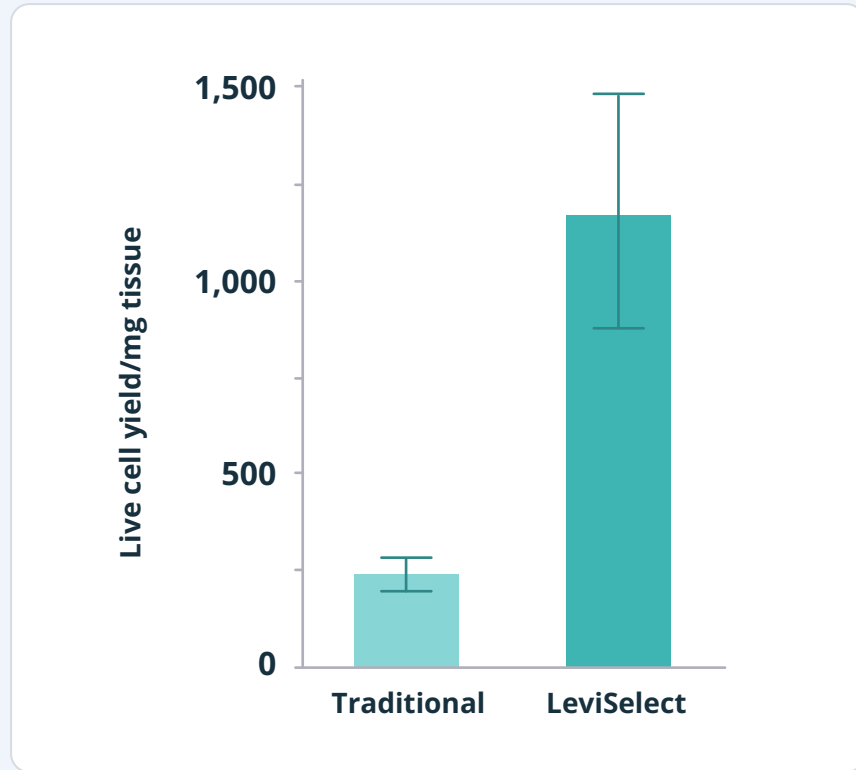
Viability is simultaneously increased to 93.5%, with no extra steps



Get more relevant sequencing data from your single cell or bulk RNA-Seq runs!



# All While Delivering Superior Data in Every Metric



**5X More Live Cells with LeviSelect than Traditional Workflow**

# Revolutionize Your Organoid Workflows

LeviCell system processes up to **500,000 cells** per well or organoid sizes **>500 microns**, providing high-throughput capabilities for organoid research



## Organoid Sample Challenges Today

- Variability of results due to size and morphological differences
- Lack of standardized protocols



**...results in less-than-ideal outcomes**

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## How LeviCell Delivers for Organoid Workflows



**Gentle, Label-Free Cell / Organoid Separation**



**Dead Cell / Debris Removal**



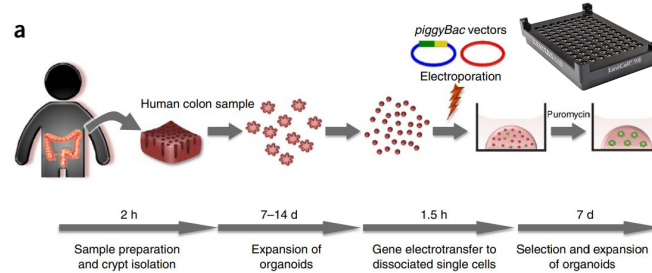
**Flexible-Throughput Processing**



**Increased Efficiency and Faster Results**

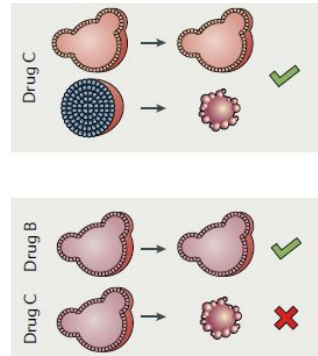
# Two Ways to Enhance Organoid Production

LeviCell can enrich for viable input cells  
Example: post-transfection



From the human colon sample, genetically modified organoids can be obtained in 3 weeks.

LeviCell can enrich for organoids  
Example: after drug treatment

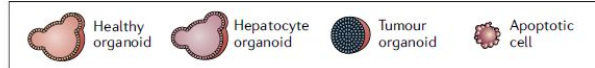


Drug B used to treat the patient

Liver toxicity testing

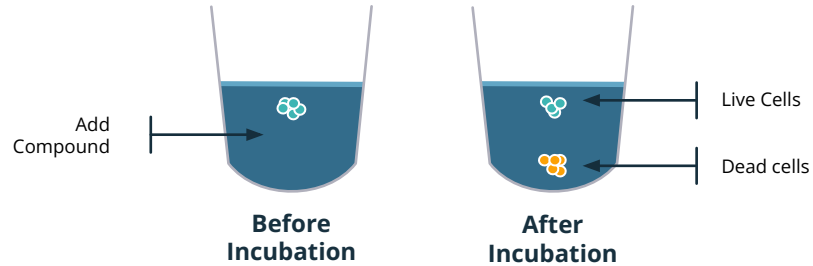


LeviCell can select the live cells after a drug treatment and collect them for further analysis or evaluation of the treatment and toxicity

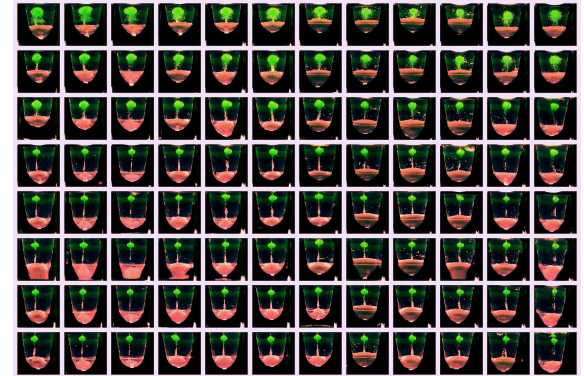
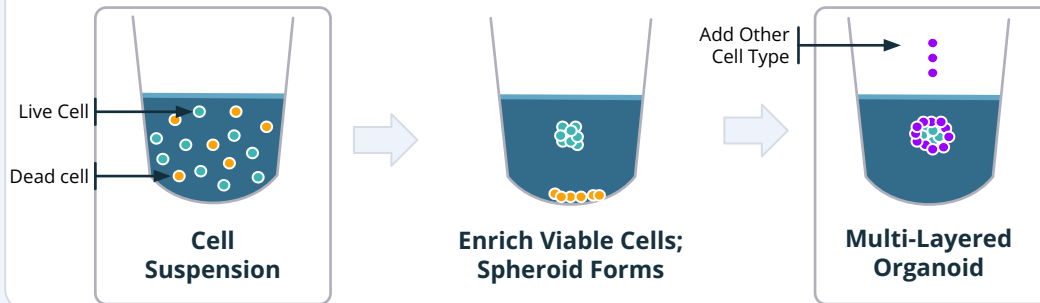


# Multi-Factorial Organoid Workflow Capabilities

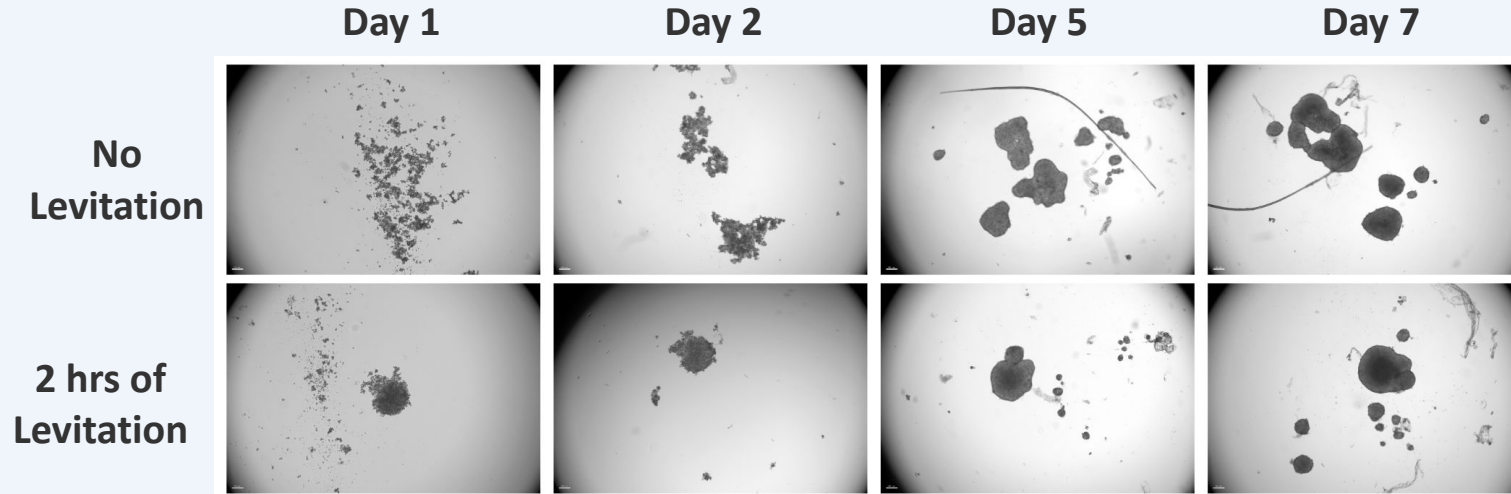
## Compound Screen and Collection



## Multi-layered Organoid Development



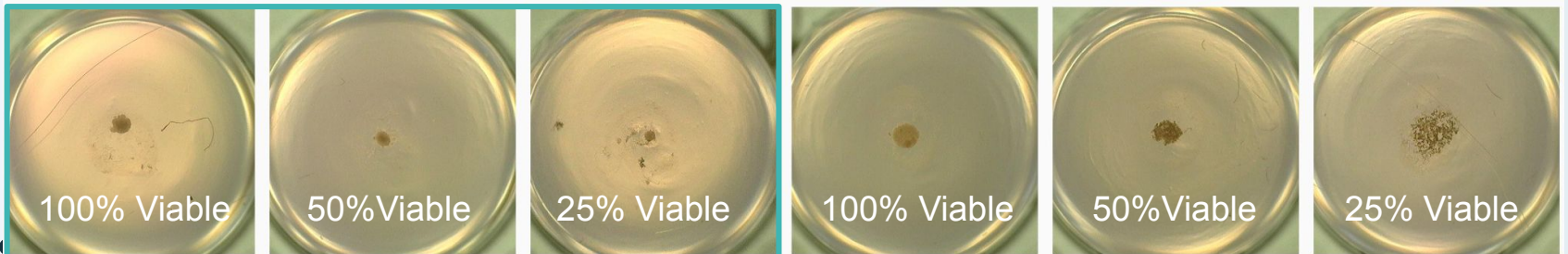
# Spheroid Structures Can Be Formed Rapidly and Show Stability Even with Low Starting Viabilities



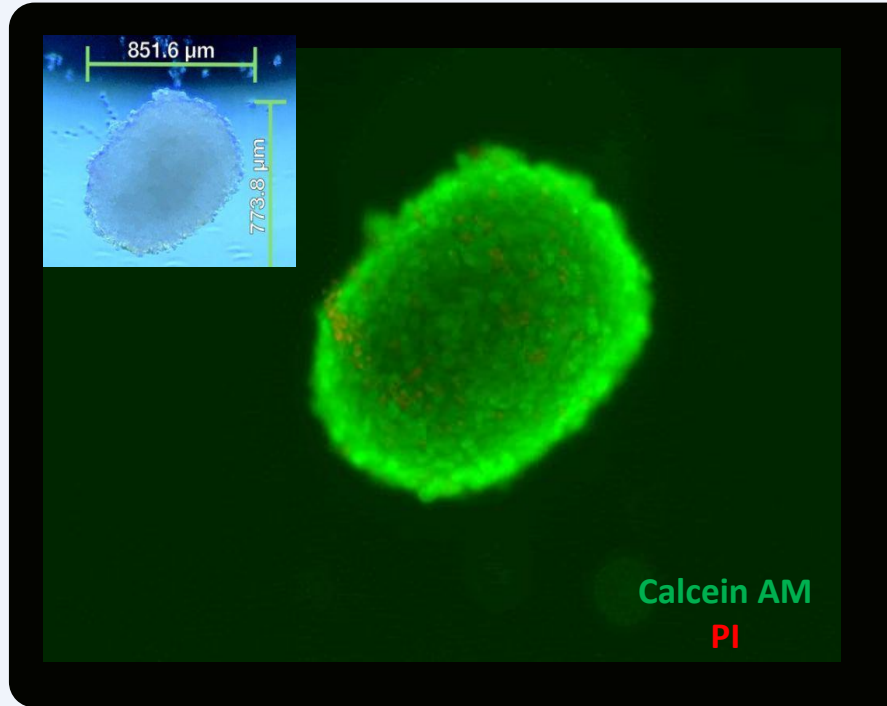
Levitation promotes live cell-to-cell contact sooner

2 hrs of Levitation - image on Day 7

No Levitation - image on Day 7

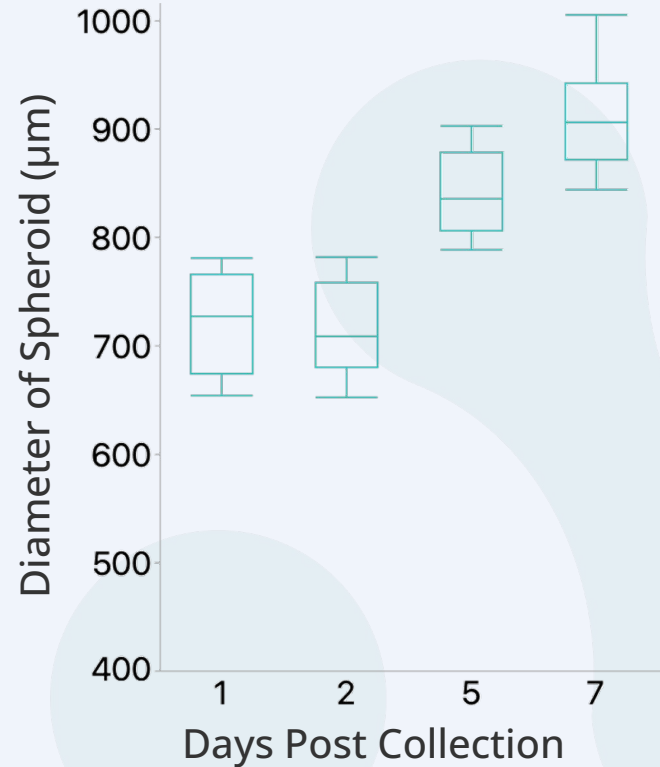


# Spheroids Formed on the LeviCell Array are Highly Viable



Cell type: HepG2

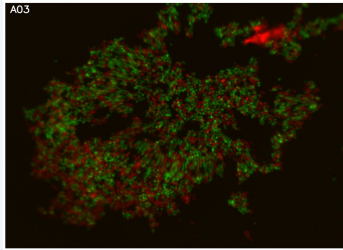
Cells were levitated **for just 2 hrs**



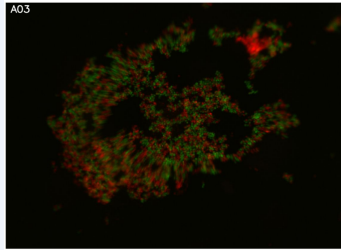
# Multi-Layer Spheroid Construction Opens New Possibilities for Cell Interaction Studies

## No Levitation

Day 1



Day 6



Without levitation, the different layers of cells were not organized



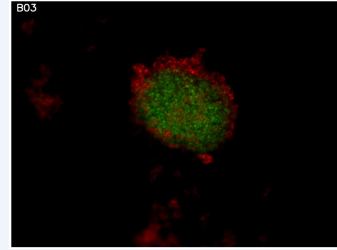
Recapitulate tissue cell-cell type interactions 3D *in vitro* (e.g. cancer microenvironment studies)



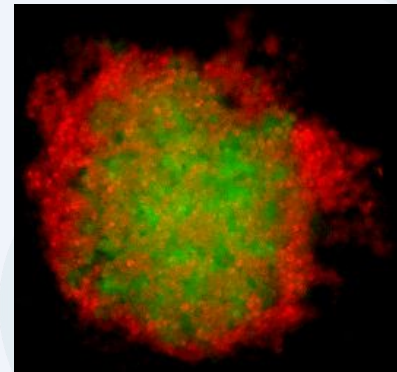
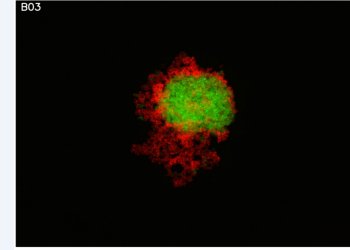
Cells were stained with CellTracker Red or Green before processing

## Levitation

Day 1



Day 6



# LeviCell Spheroid and Organoid Applications



## Cell Culture Spheroid Production

- Rapid production with 'hands-free' automation with consistent shape/size/density
- Tumor spheroids and organoids production
- Built-in viability information/monitoring with imaging array (future capability)



## Spheroid Shape Engineering & Layering

- Capability to shape cells by altering magnetic direction
- Potential customized shape by request
- Layering of multiple cell types



## In Vitro Drug Studies

- In vitro drug studies are faster and more efficient
- Viability enrichment of starting cells, or already-formed organoids





# Thank you

*LevitasBio drives scientific discovery by delivering solutions that enable accurate, reliable, and reproducible results*

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# LeviCell System Specifications for Sample Enrichment

Specification	Value
Max number of samples per plate	96
Volume per sample	50 $\mu$ L
Minimum number of input cells	10,000 per well
Maximum number of input cells	500,000 per well (48M cells total per plate)
Number of output fractions	192
Enrichment time (typical protocol)	40 min



# LeviCell System Specifications for Sample Enrichment

## Operational

Input voltage	100-240 VAC, universal 47 – 63 Hz
Input current	Standard outlet
System dimensions W x D x H	750 mm x 500 mm x 630 mm (30" x 19" x 25")
Instrument weight	27 kg (59 pounds)

## Environmental

Operating ambient temperature	19 °C – 25 °C
Operating relative humidity	< 85% RH ambient, non-condensing
Shipping environment	5 °C to 50 °C, RH 5% - 99%, non-condensing

