

The LeviCell 96 system: A One-Stop Solution for High-Quality Sample Prep at Scale

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The LeviCell® 96 system leverages our proven Levitation Technology™ and expands its capabilities to a 96 well ANSI plate format. Our proprietary **Selective Arrayed Levitation Technology (SALT™)** enables cellular and nuclei inputs to be enriched and washed, separating viable live cells or nuclei from their debris and contaminants to deliver better data quality at scale.

SALT enables a revolution in streamlined workflows - enabling enrichment, washing, and targeted depletion into a single unified solution.

Cell input ranges supported are as low as **10,000** up to **500,000** cells per sample. SALT technology achieves consistent, well-to-well performance that eliminates the variability of manual sample preparation and opens the door to studies that were previously out of reach.



Figure 1. The LeviCell enrichment technologies - LeviCell 96, center; LeviCell EOS, top-left; LeviCell 1.0, bottom-left; and the Selective Arrayed Levitation Technology array (SALT), right. The magnet arrangement of the SALT allows for 96 simultaneous levitation reactions. The cartridge based systems can provide either 4 sample processing (LeviCell EOS) or single sample (LeviCell 1.0) enrichment.

Viable Cell Enrichment

- Why:** Separation of healthy cells from non-cellular biomass for optimized downstream assays including genomic, proteomic or metabolomic analysis.
- How:** Differences in membrane permeability cause different behavior between levitated live and dead cells. Live cells levitate away from the dead cells and debris.
- What:** Levitation Technology is tissue agnostic. Human and non-human tissue samples, dissociated tumor samples, PBMC's, adherent and suspension cell lines, as well as various plant tissues have all been successfully enriched and taken to downstream studies.

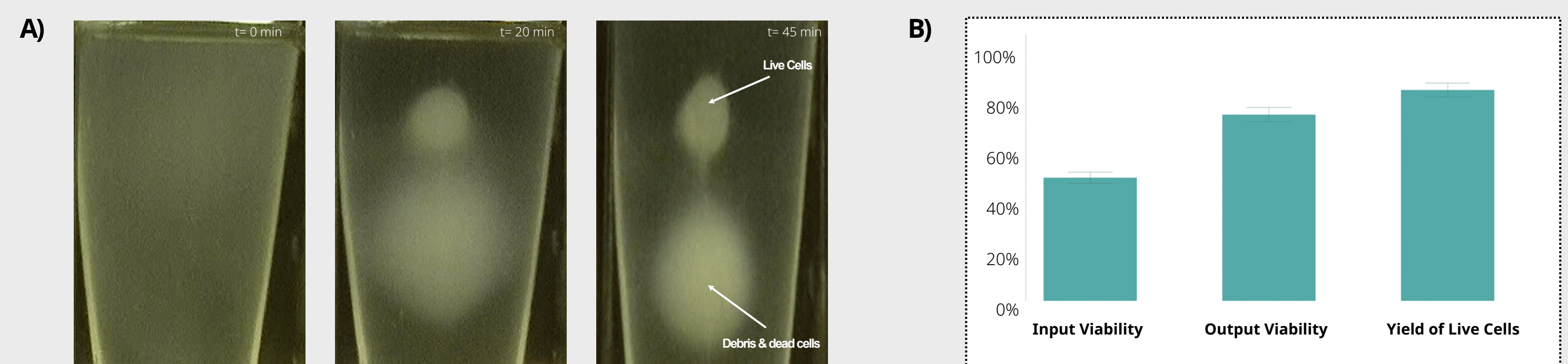


Figure 2. A) Images of a PBMC sample levitating in a single well of the SALT array, over three different time points. Over time the live, viable cell pellet can be observed forming above the dead cells and debris. **B)** 36 PBMC samples were levitated simultaneously and analyzed for viability and yield. Viability increased from an average of 50% to 80%, with a consistent yield of live cells above 70%.

Cell Washing

- The LeviCell 96 System provides a **centrifuge-free** alternative to cell washing
- Cells can be washed during live cell enrichment with a series of buffer exchanges. Unwanted substances are washed away while retaining viable cells from the starting sample which are then transferred to a buffer of choice
- Compatible with **CITE-Seq**, **Cut & Tag**, and other applications that make use of antibody staining

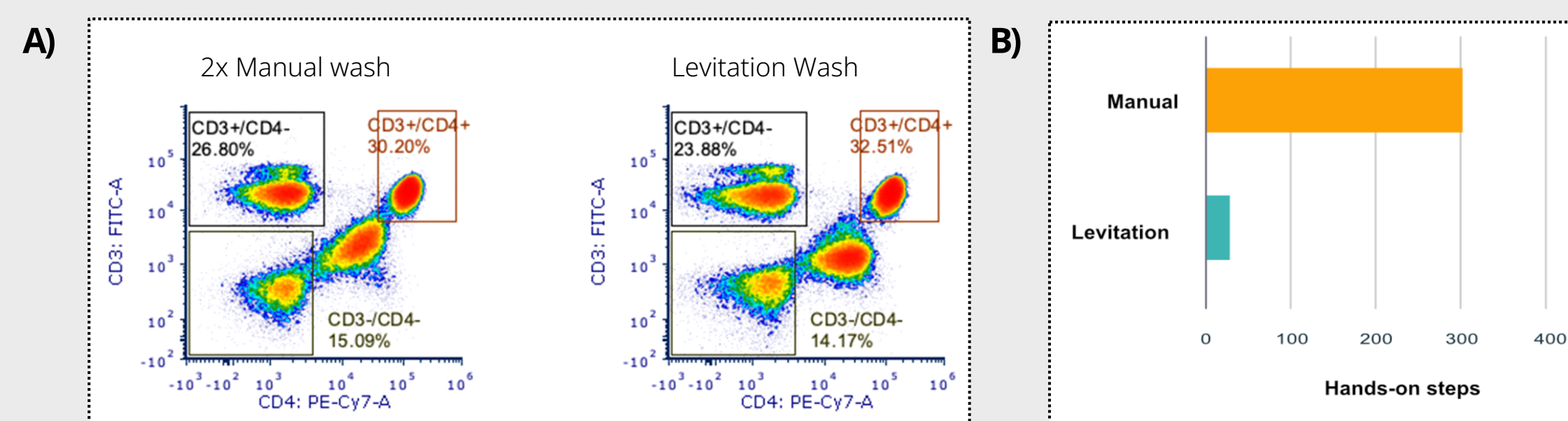


Figure 3. A) Flow analysis of washed PBMCs shows no difference in sample composition between manual and Levitation wash. **B)** with many less hands on steps required for the LeviCell washing.

Targeted Cell Depletion

- How:** Antibody-mediated removal of unwanted cells or contaminants by negative selection allows simultaneous targeted depletion and viable cell enrichment
- What can I deplete:** 37+ enrichment available with LeviSelect kits. Depletion assays are also available

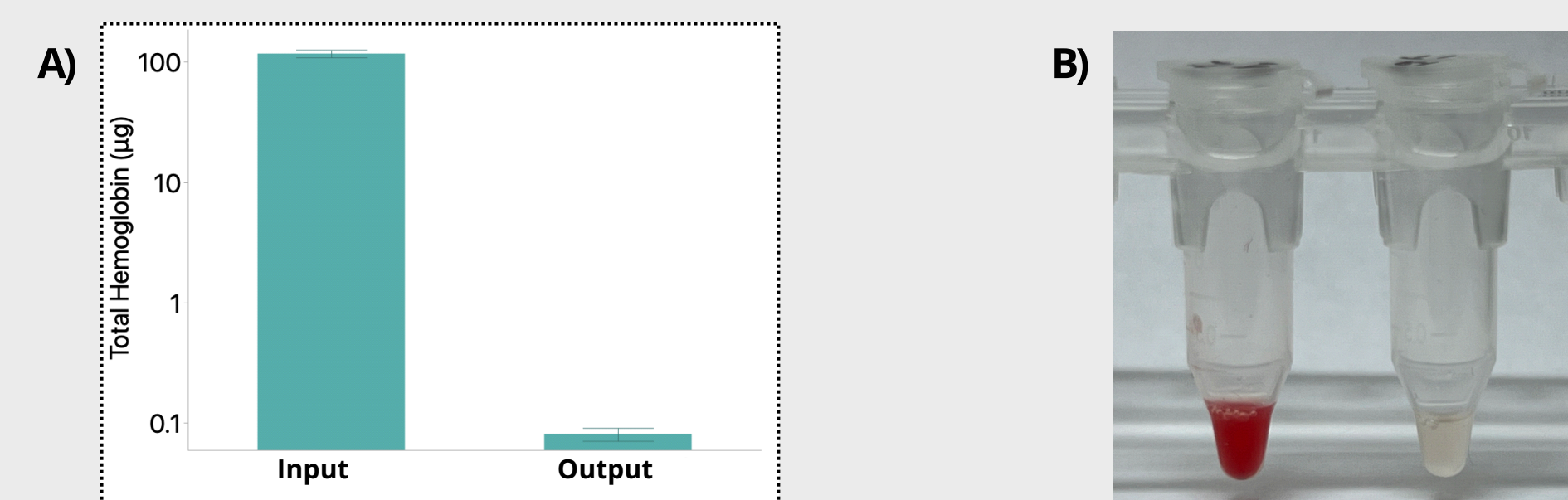


Figure 4. A) Detection of RBC-derived hemoglobin after using the **LeviSelect Human RBC Depletion Kit**. A mixture of approximately 10^5 H358 cells (human lung cancer cell line) and 10^7 human RBC was subjected to RBC depletion. Hemoglobin content in the input and the output was measured by a colorimetric assay and the average results (\pm SD) are shown. **B)** Visible colour change before and after RBC depletion.

Nuclei Isolation and Enrichment

- The LeviCell 96 provides a one stop solution for extraction of nuclei from suspension cells including **PBMCs**. Enrichment, isolation, washing and elution of nuclei occurs in sequential wells on the SALT (Figure 5).
- Levitation enrichment has also been used with nuclei suspensions from other tissue types. The output nuclei suspensions have less debris, and are much more uniform in the particle count than their input samples (Figure 6).

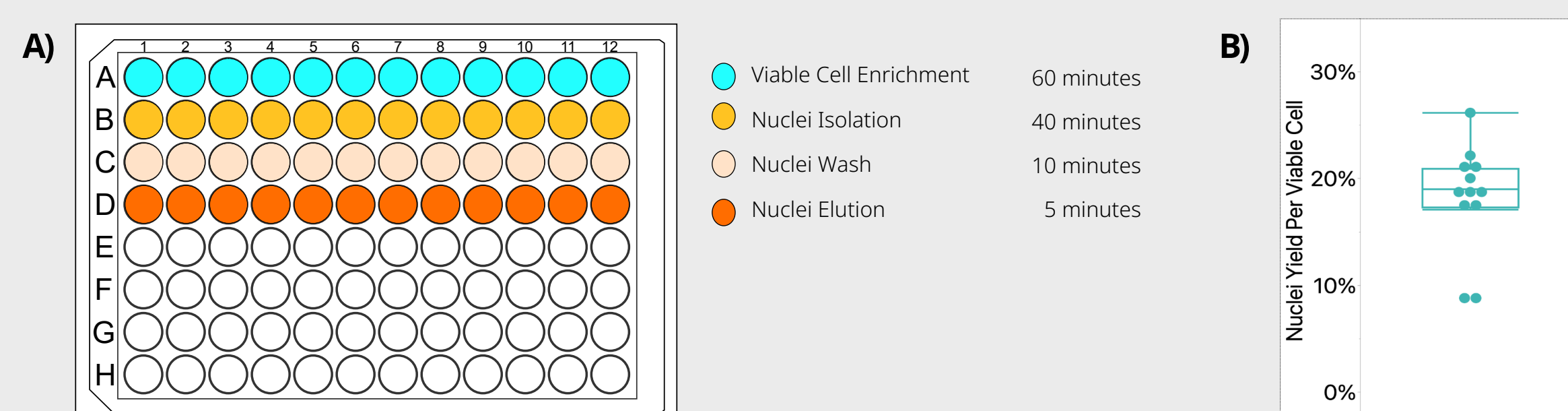


Figure 5. A) Automated nuclei extraction of suspension cells for 12 samples. In under 120 minutes, suspension cells, such as PBMC samples, can be enriched, the nuclei extracted, washed and eluted in a target choice of buffer. Throughput can be increased to 24 samples at a time on a single SALT array. **B)** The average nuclei yield per viable cell of a sample.

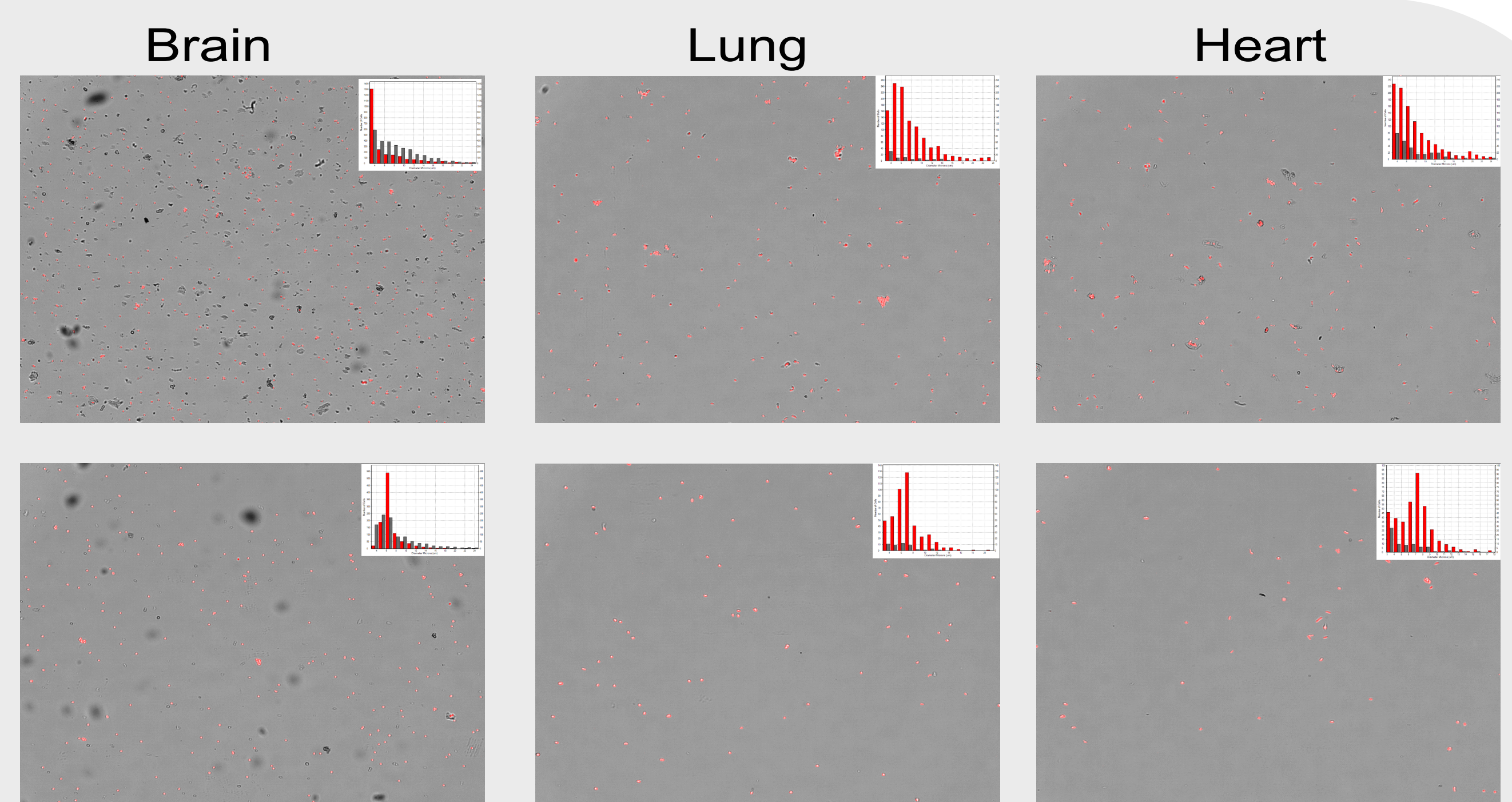


Figure 6. Images of nuclei suspensions before (top) and after (bottom) clean up. Histograms on the images show the detected particle size as counted by cell counter. From the histograms it can be seen that the size of particles measured by the automated counter after levitation is much more uniform.

Conclusions

- Levitation Technology enables automated sample cleanup, enrichment, targeted cell depletion, and nuclei extraction
- The LeviCell 96 platform minimizes operator hands-on time, increasing efficiency per experiment and reduces sample-to-sample variability
- Levitation Technology is available for up to 96 samples at a time
- Improving input sample quality via Levitation results in improved quality data richness in downstream assays and analysis

Interested? Get in touch!

Maximize the value of your experiments by optimizing and enriching your samples. Our solution is now suitable for small and large scale experiments, and thanks to its tissue-agnostic capabilities suitable for most biological samples.

Get in touch via our website or scan the QR code:

www.levitasbio.com

