W8

Lab weighing of **3D biological samples**

The W8 Physical Cytometer represents the only available technology for the biophysical characterization, physical-based sorting, and sterile recovery of sphere-like 3D cell cultures. Our groundbreaking flow-technology, combined with a Stokes' law adaptation to a customized image-based tracking analysis, allows the measurement of the sample's **mass density, weight and size,** providing an entire dataset in just a few minutes. Live or fixed samples, ranging from 50 µm sized cell clusters to spheroids or organoids up to 500 µm in diameter, can be physically characterized, gathering crucial compactness-correlated information. Furthermore, the intuitive software interface allows the operator to perform the stress-free physical-based sorting of a target sub-population with preserved samples' sterility and viability.

Designed by engineers, intended for researchers

Its small size and easy handling allow the operator to place the Instrument under the Biological Safety cabinet, when working with live 3D samples. After the custom settings selection, the instrument digitally analyses the target samples with full automation degree.

Flexible to sample size and type

Although mainly designed for cancer Spheroids or organoids, potentially every type of sphere-like, cellular or bio, aggregate between 50µm and 500µm in diameter fits in the sample requirements for the instrument analysis.

Physical-based gentle sorting

The patented method of automated sorting allows pure, individual target spheroids to be recovered for further downstream analysis. Flow rate and microchannel geometries are specifically designed to avoid any shear stress on the 3D samples.

Unparalleled, superior

The W8 Physical Cytometer is equipped with the W8 chip, a specifically conceived flow-channel for the analysis of 3D samples, with sharp precision (< 0.1%) and accuracy (< 1.0%) with regards to the mass density measure.

cell dynamics

Determination of *in vitro* drug efficacy by means of biophysical markers

The W8 Physical Cytometer constitutes an ultimate technology in drug discovery, as it provides a label-free, non-invasive analysis that helps overcome the technical limits when imaging 3D cell cultures. The precise measurement of 3D tumor spheroids' physical properties represents a key step forward to the accurate testing of new treatments' potential. While weight loss and diameter shrinkage are coherently related to decreased cell viability, mass density value proves to be a valuable marker of 3D spheroids' impaired compactness due to mechanisms of drug action.

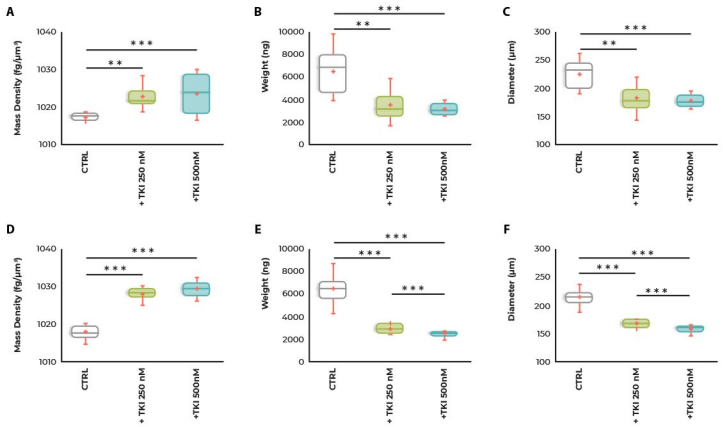


Fig. 4. Measurement of mass density, weight, and diameter of LoVo spheroids treated with tyrosine kinases inhibitor (TKI). Measurements of mass density (A and D), weight (B and E), and diameter (C and F) of live (top panels) and fixed (bottom panels) LoVo spheroid s after 10 days of treatment with TKI 250 nM (shown in green) and 500 nM (shown in light blue) and relative controls (shown in white). Data are graphically depicted in box-and-whisker plots and the lines, extending from the boxes, indicate variability outside the upper and lower quartiles. **p< 0.01 and ***p< 0.001.

Sargenti et Al, 2021 PlosONE

TECHNICAL SPECIFICATIONS

FEATURES

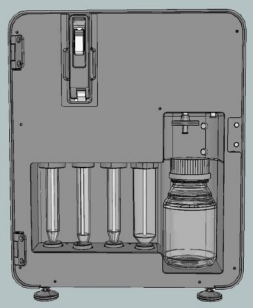
OUTPUTS	Size (µm) Weight (ng) Mass Density (fg/µm³)
SORTING	Sample recovery with a threshold of 70%
PERFORMANCE	Precision: < 0.1 % Accuracy: < 1.0 %
SAMPLE SIZE RANGE	50 - 500 µm
SAMPLE INPUT FORMAT	15 ml tubes (16 x118,5 mm) V bottom 50 ml tubes (28,5 x 114,5 mm) V bottom

SOFTWARE

LIBRA	The LIBRA software is for *Research Use Only*. Not for use in diagnostic procedures. The License is provided to the customer as an essential element for enabling the instrument use.
LANGUAGE	English
PC REQUIREMENTS	Processor: i7-9700 Octa Core 3 GHz Ram: 16 GB Hard disk: SSD 256 GB USB ports: 3.1 Super Speed
OPERATIVE SYSTEM	Windows 10 Home or Professional or Business edition

INSTALLATION

DIMENSIONS	35,7H x 28,6W x 18D cm
POWER SPECIFICATIONS	110 - 230 VAC, 50/60 Hz
WEIGHT	10 Kg
OPERATING TEMPERATURE	18 - 30 °C or 64,4 – 86 F



cell dynamics