Arthur™

CE

Novel fluorescence cell counter

Experience Accuracy !

Cell Counting & Analyzing with Arthur™

- Accurate cell counting & analysis
- Various & fast analysis assay tools
- Rapid setup, user friendly interface
- No need for maintenance

NanoEnTek

Arthur™, Novel fluorescence cell counter is

3-channel (bright field, green fluorescence and red fluorescence) desktop image analyzer that allows users to perform assays for cells in suspension, including GFP and RFP expression, apoptosis, cell viability (live, dead, and total cells), cell cycle, and cell counting assays using state-of-the-art optics. It is compatible with a wide variety of eukaryotic cells. Depending on complexity of the assay and number of fields captured, it takes 10 seconds to 2 minutes that Arthur™ counts for a typical assay with only 25 µL of sample volume.

Advantages

Advanced accuracy

- Get comprehensive, sufficiently accurate assay results
- Obtain cell images and reliable counting results with graphic data
- Check histograms and select cell size gating

Versatility (Flexibility)

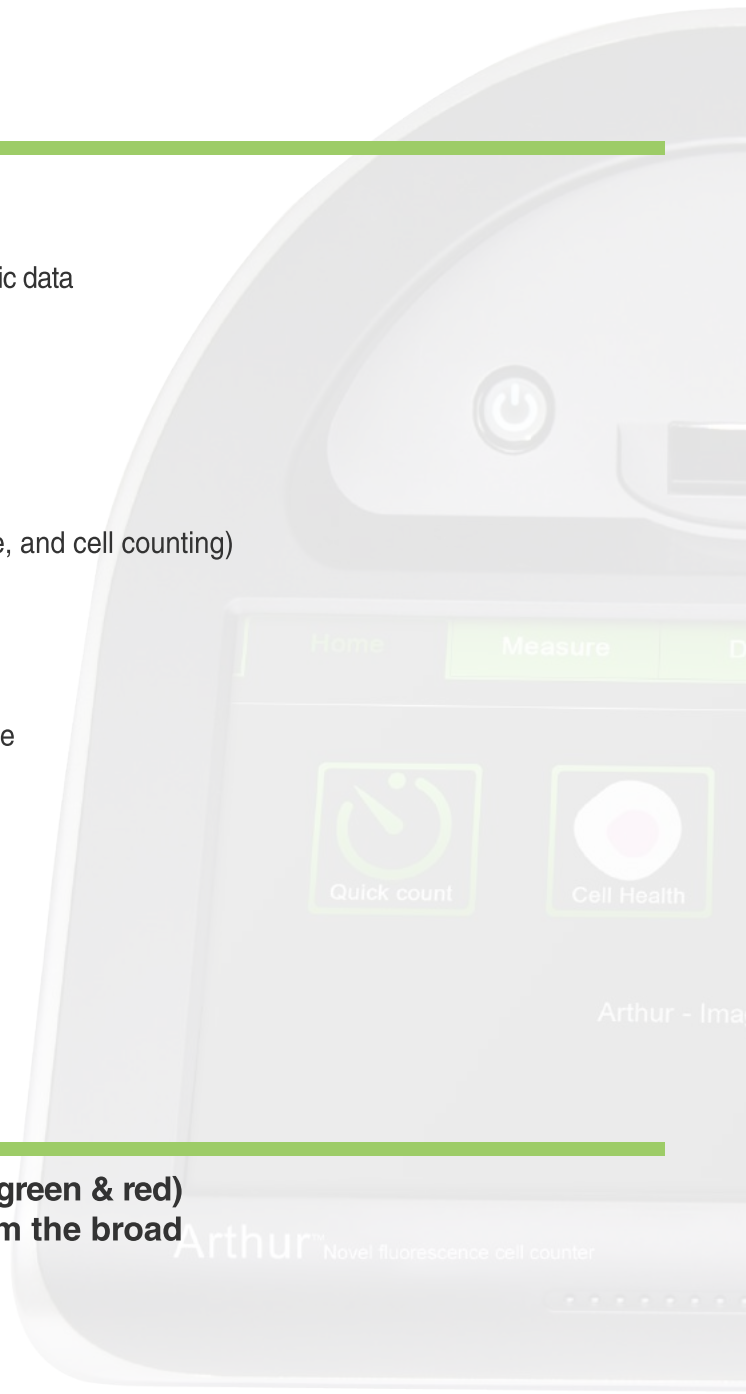
- Compatible with a wide variety of eukaryotic cells
- Performs various assays for cells in suspension
  (GFP/RFP expression, apoptosis, cell viability, cell cycle, and cell counting)

High-speed cell counting & analysis

- Performs 3-channel population analysis in 1 minute
- Counts for a typical assay with only 25 µL of sample volume

Easy of use

- Rapid setups and simple operations
- No system maintenance required
- User friendly interface with LCD touch screen



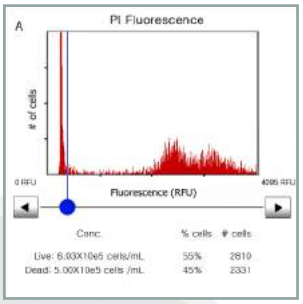
Assays and applications

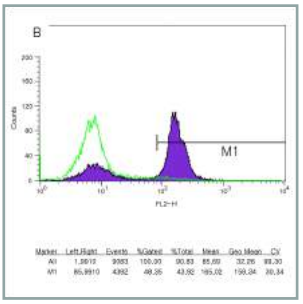
Arthur™ features two fluorescent channels (green & red) as well as bright. User is available to perform the broad range of assays:

- Cell counting & viability
- GFP and RFP expression
- Annexin V apoptosis analysis
- Cell cycle analysis

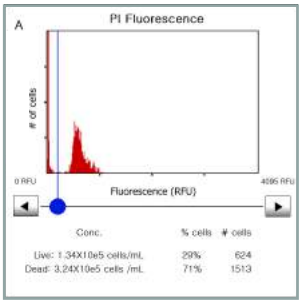
Cell viability assay

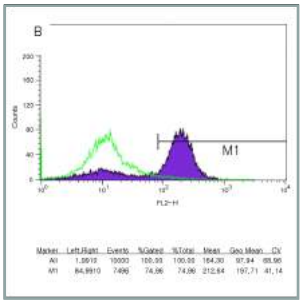
Cell line: Jurkat





Cell line: U-2 OS





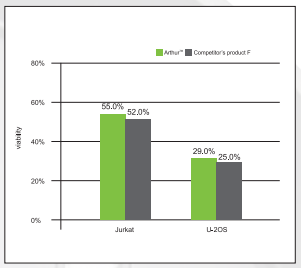
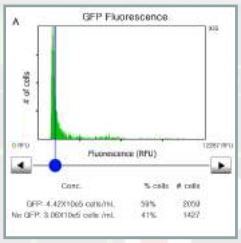


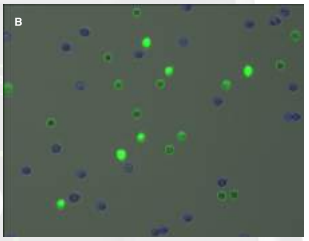
Figure 1. Comparison of cell viability in two platforms

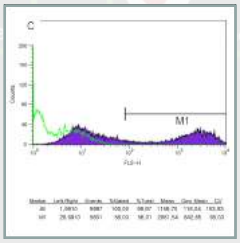
Heat shocked cells were stained with Propidium Iodide (PI) and percent viable cells of the total population were analyzed by Arthur™ (A) and competitor's product F (B) with two different cell types, Jurkat and U-2 OS. In all cases, the fluorescence threshold setting was confirmed visually in the image of the Arthur™. For each cell line, viability results from the Arthur™ were consistent with the results obtained from the competitor's product F.

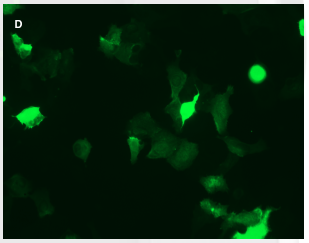
GFP expression assay

GFP-fusion construct 1

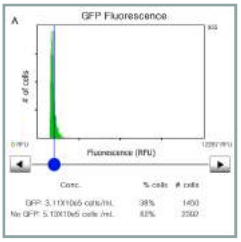


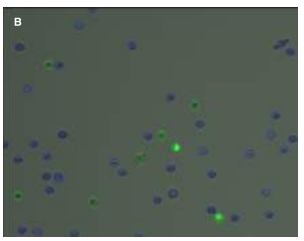


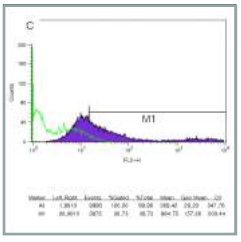


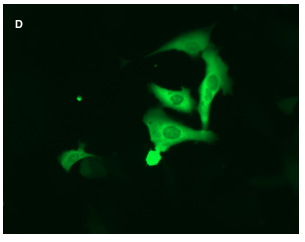


GFP-fusion construct 2









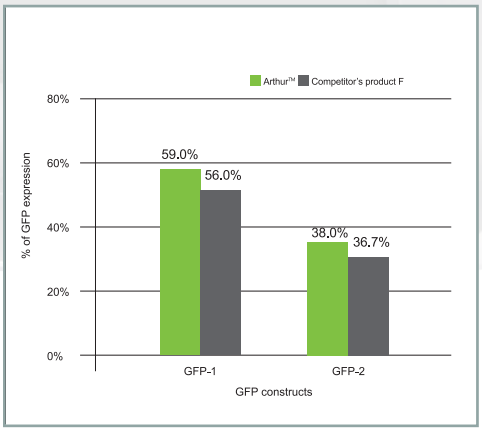


Figure 2. Comparison of GFP expression profile in two platforms

U-2 OS cells were transfected using the Neon™ transfection system (from Life Technologies) and 0.25 µg of the five different GFP constructs and then analyzed on the Arthur™ and competitor's product F to determine transfection efficiency. The histograms in panels A (Arthur™) and C (competitor's product F) show the green fluorescence intensities and counts for the transfected populations. The percentages of GFP-expressing cells detected with the Arthur™ were consistent with the results from the competitor's product F. 'Colored circles' option makes it easy to identify gated cells (Panel B); colored circles represent: cells expressing GFP (green circles), non-GFP-expressing cells (blue circles). The image in panel D shows the GFP expressing cells before trypsinization under the conventional fluorescence microscope.

Annexin V apoptosis analysis

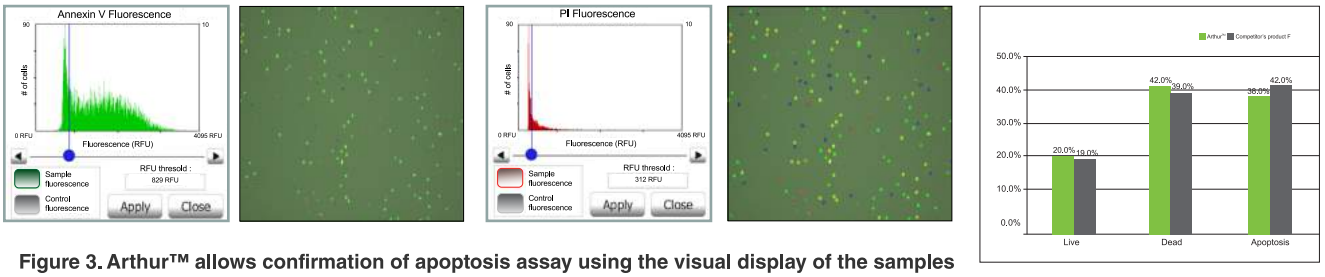
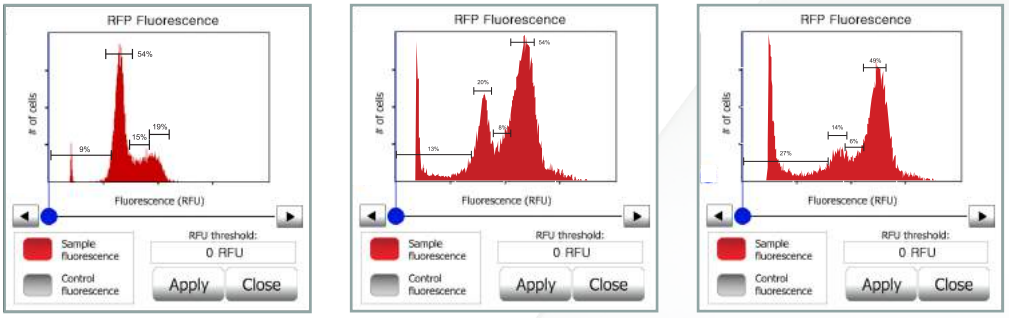


Figure 3. Arthur™ allows confirmation of apoptosis assay using the visual display of the samples

Following 18 hour-treatment of Staurosporine, HeLa cells were stained with apoptosis kit and subjected to Arthur™ and competitor's product F. The apoptosis kit contains an annexin V–Alexa Fluor® 488 conjugate and PI to differentiate live (annexin V–negative/PI-negative), dead (PI-positive), and apoptotic (annexin V–positive/PI-negative) cells. Using Arthur™, 20 % of the cell population were measured as live, 38 % apoptotic, and 42 % dead, confirming that the Arthur™ provides quantitative data comparable to those collected from competitor's product F.

Cell cycle assay

DMSO treatment (control) | **Nocodazole treatment** | **Epothilone B treatment**



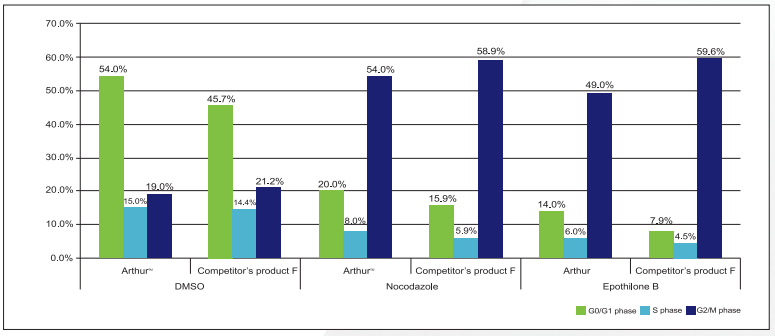


Figure 4. Comparison of cell cycle profiles in two platforms: Arthur™ and Competitor's product F

HeLa cells were treated with Nocodazole (microtubule-destabilizer) or Epothilone B (microtubule-stabilizer) to arrest cells in G2/M phase. Cells were fixed with 70% ethanol and stained with Propidium Iodide(PI). The histograms show the percentages of G0/G1 phase, S phase and G2/M phase of cell cycle analysis for drug treated HeLa cells on the Arthur™ (A) and Competitor's product F (B).
The cell cycle analysis of Arthur™ was highly consistent with the results obtained from competitor's product F.

Specifications

Counting time	10 sec. ~ 2 min.
Cell measurement range	1 × 10^5 - 1 × 10^7 cells/mL
Cell size range	5 - 60 μm
Sample volume	25 μL
Optics	3 channels (bright field, green fluorescence and red fluorescence)
Excitation	Green channel LED: 458 ± 20 nm Red channel LED: 530 ± 20 nm
Filters	Green channel: 466/40 EX, 495 LP Di, 525/50 EM Red channel: 543/22 EX, 580 LP Di, 585 LP EM
Camera	1.3 Mega pixels, 4× objective, 4× or 16× digital zoom
USB drive	4 GB
Operating power	100-240 V, 2.5 A, 120 W
Frequency	50 / 60 Hz
Dimension	290 mm (W) × 440 mm (D) × 290 mm (H)
Weight	8.7 kg (19.4 lbs)
Operating environment	5 - 40 °C, 20 - 95 %

Ordering information

Cat. No.	Description	Contents
AT1000	Arthur™ Novel fluorescence cell counter	Main device, Power supply, USB drive, Arthur™ Cell analysis slide (50 slides)
AC0050	Arthur™ Cell analysis slide	50 slides (100 counts)
AC0500	Arthur™ Cell analysis slide	500 slides (1,000 counts)
AB0100	Arthur™ Calibration beads	Alignment beads, Green calibration beads, Red calibration beads (100 μL/tube)

NESCT-ATT-001E (V.0.6)

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