NanoEntek

Less than 25 sec

ADAM
ADAM

ADAM **MC2**

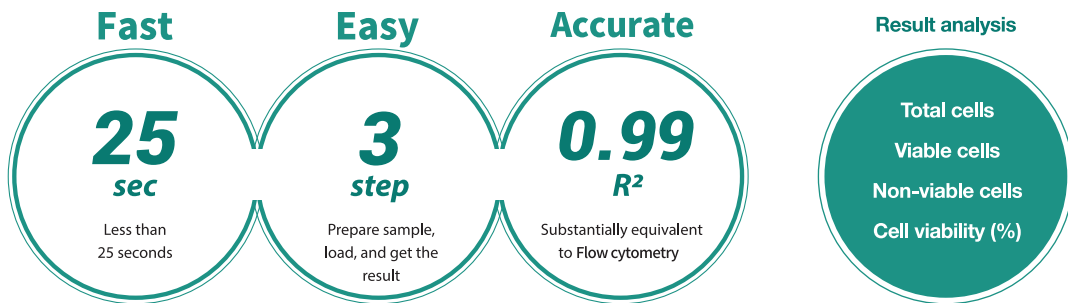Automated Cell Counter
for R&D

ADAM **CellT**

Automated Cell Counter
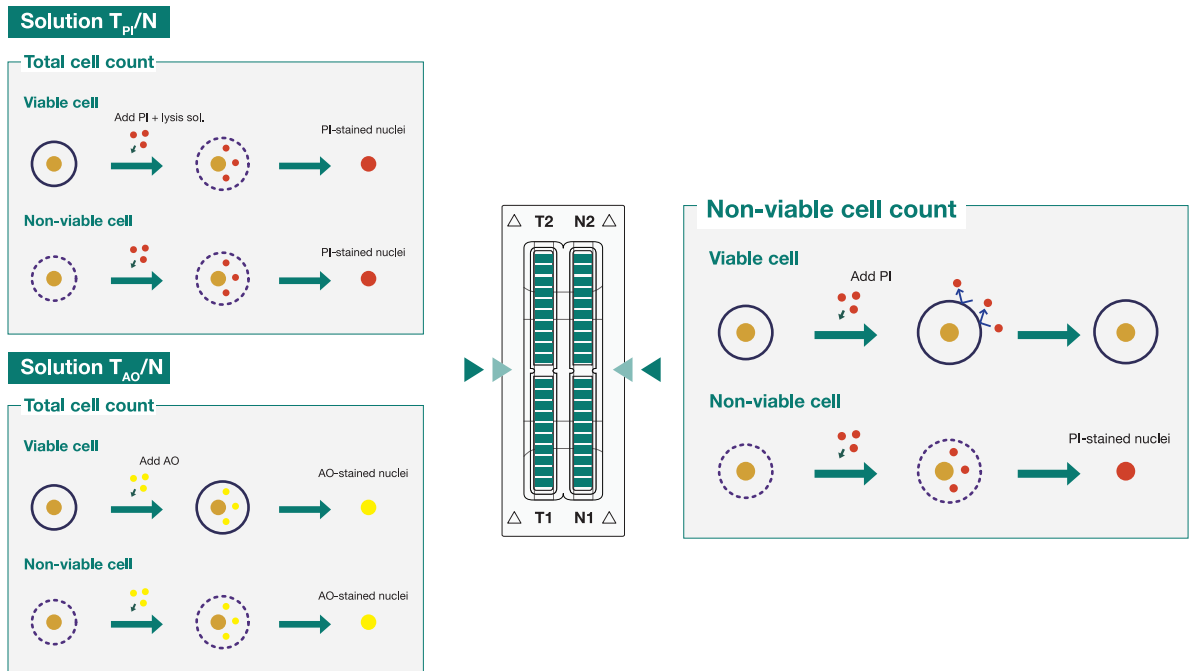for cGMP

ADAM MC2 & CellT

The Most Accurate Cell Counter

ADAM-MC2 and ADAM-CellT are new standard of automated fluorescence cell counters. ADAM stands for Advanced Detection and Accurate Measurement. ADAM utilizes sensitive fluorescence dye staining, LED optics and CMOS detection technologies to make the cell analysis more accurate and reliable. It measures the number of total cells, viable cells, non-viable cells and shows viability results. Combined with a disposable microfluidic chip, the operation is now extremely simple, easy, and cost-effective.

Fast
25 *sec*
Less than 25 seconds

Easy
3 *step*
Prepare sample, load, and get the result

Accurate
0.99 *R²*
Substantially equivalent to Flow cytometry

Result analysis
Total cells
Viable cells
Non-viable cells
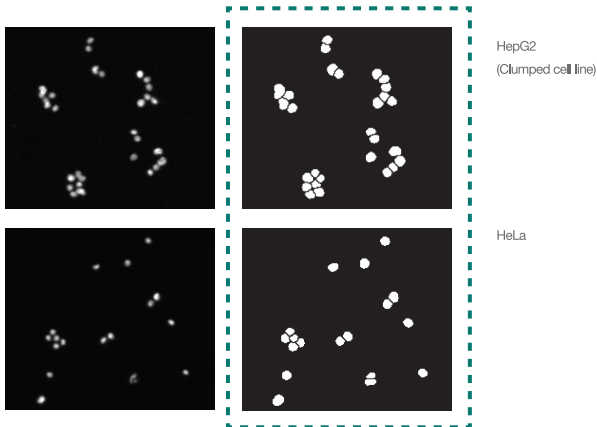Cell viability (%)

Principle of Viability Measurement (PI, AO-Staining Method)

There are two methods of viability measurement. After the samples are stained with fluorescent dye, propidium iodide (PI) or acridine orange (AO), which intercalates DNA to stain the nucleus of target cells, ADAM takes fluorescent images automatically. The obtained images are processed by image analysis software integrated inside the system.

Solution T_{PI}/N

Total cell count

Viable cell
Add PI + lysis sol.
PI-stained nuclei

Non-viable cell
PI-stained nuclei

Solution T_{AO}/N

Total cell count

Viable cell
Add AO
AO-stained nuclei

Non-viable cell
AO-stained nuclei

△ T2   N2 △
△ T1   N1 △

Non-viable cell count

Viable cell
Add PI

Non-viable cell
PI-stained nuclei

ADAM MC2 & CellT

Counting Aggregated and Irregular-Shaped Cells


HepG2
(Clumped cell line)

HeLa

ADAM provides accurate and reliable results by counting aggregated and irregular-shaped cells.

- Accurate count based on cell size and shape
- Individual count of aggregated cells
- Debris is excluded from results

Among the images on the left, the images on the right side indicate cells that have been counted by ADAM.

Accuracy & Repeatability

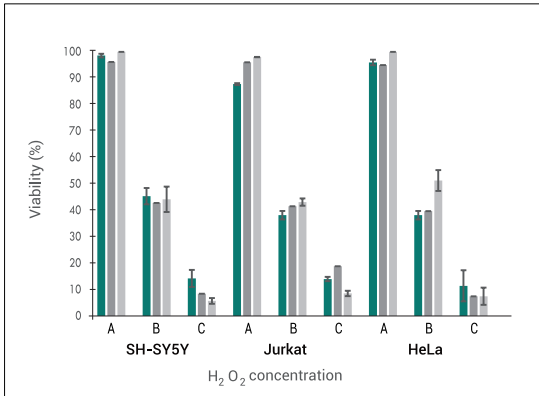Correlation of total cell counting between ADAM-MC2 and flow cytometry.

$y = 0.995x + 92640$
$R^2 = 0.9976$
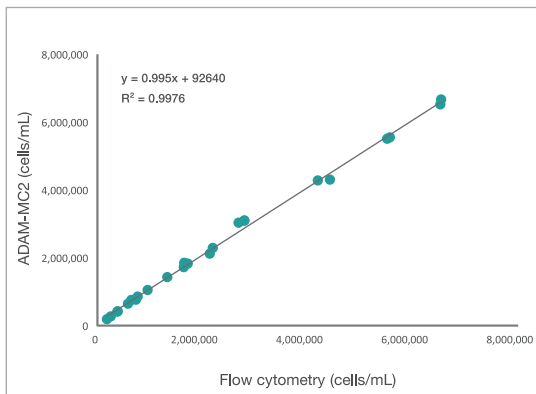
Samples of low, medium and high concentration of cells were counted with ADAM. The repeatability at each level of cell concentration is high.
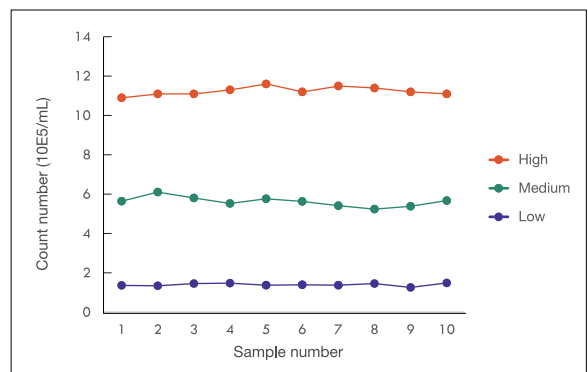
	High n=10	Medium n=10	Low n=10
MEAN	1.12E+06	5.62E+05	1.40E+05
SD	21187.00	24679.28	7103.21
CV	1.88	4.39	5.06

Comparison of Cell Viability

Comparison of cell viability between ADAM, flow cytometry, and manual counting. SH-SY5Y, Jurkat, HeLa cells were treated with 100, 300µM H_2O_2 for 3 hours, then analyzed by ADAM, flow cytometry, and manual counting.

■ : ADAM ■ : FACS ■ : Manual count
A: Untreated / B: 100 µM / C: 300 µM

ADAM MC2 & CellT | Cell Therapy

Cell Therapeutic Applications

ADAM can be used as a device for monitoring and QC of the cell numbers and viability in the process of manufacturing cells (CAR-T cells, stem cells, etc.) for Cell Therapy.

In addition, it is possible to use ADAM depending on the cell types (Whole blood cell, PBMCs, etc.)that need to be monitored during the manufacturing of cell therapy products.
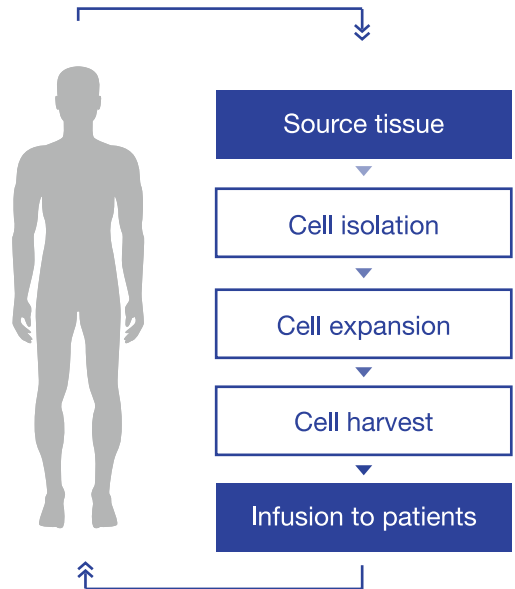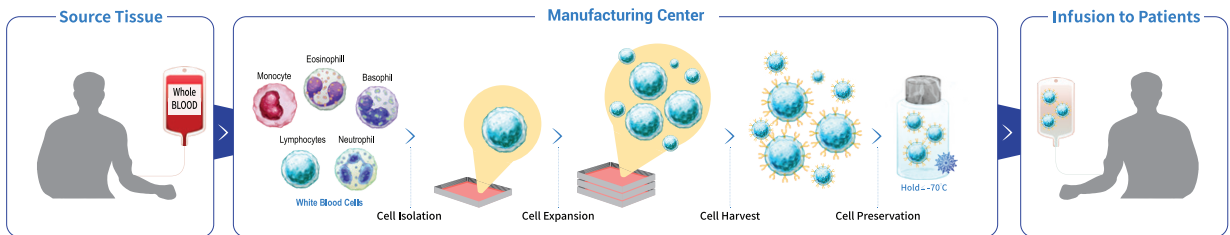
Application

01	Stem cell	05	Whole blood cell
02	CAR-T cell	06	Aggregated cell
03	CAR-NK cell	07	PBMCs
04	Adipose-derived stem cell		

Source tissue
↓
Cell isolation
↓
Cell expansion
↓
Cell harvest
↓
Infusion to patients

QC Platform for Producing CAR-T cell

It is easy to monitor all different steps of the purification, expansion, and formulation of CAR-T cells using the ADAM to ensure precise and reliable results. ADAM can be used for cGMP, process control and quality control of CAR-T cell.

Source Tissue

Whole BLOOD

Manufacturing Center

Eosinophil
Monocyte
Basophil
Lymphocytes
Neutrophil
White Blood Cells

Cell Isolation | Cell Expansion | Cell Harvest | Cell Preservation

Hold~-70°C
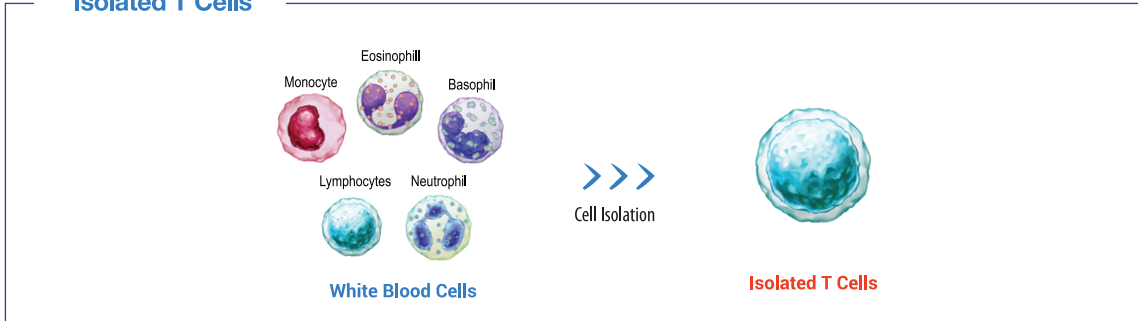
Infusion to Patients

ADAM MC2   **ADAM CellT**

For R&D, Process Control, Quality Control of CAR-T cell

Monitoring the whole process from leukapheresis to the formulated product using the ADAM

Performance Test from Isolated T Cells

Isolated T Cells

Monocyte · Eosinophil · Basophil · Lymphocytes · Neutrophil

Cell Isolation
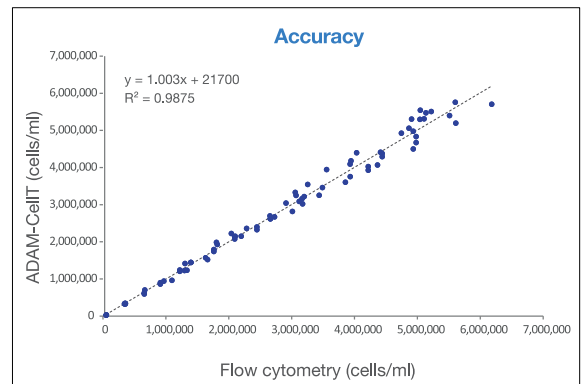
White Blood Cells

Isolated T Cells

The profiles of T cells which was used for performance evaluation - Flow cytometric analysis of CD3 expression on unsorted (WBC; left panel) or sorted (Isolated T cell; right panel) human peripheral blood lymphocytes.
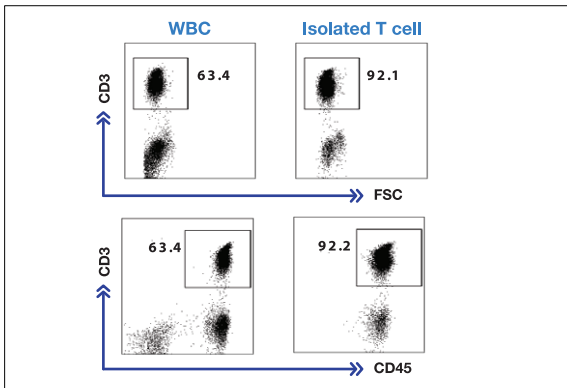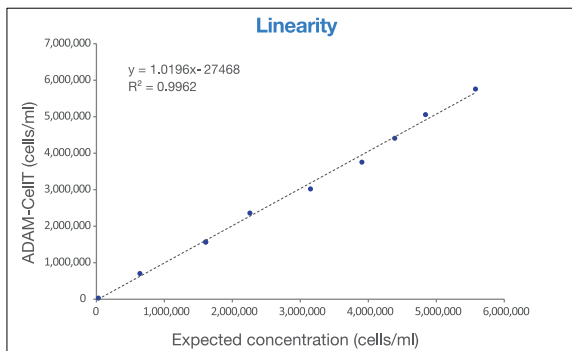

Accuracy

Correlation of T cell counting between flow cytometry and ADAM in Isolated T cells.

Method comparison between ADAM and flow cytometry.

$y = 1.003x + 21700$
$R^2 = 0.9875$

Linearity

Linearity test between ADAM-CellT and expected concentration using isolated T cells.
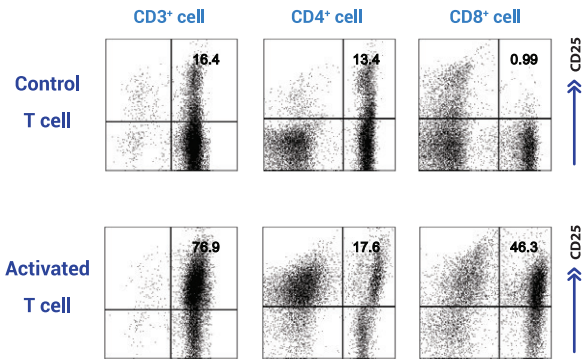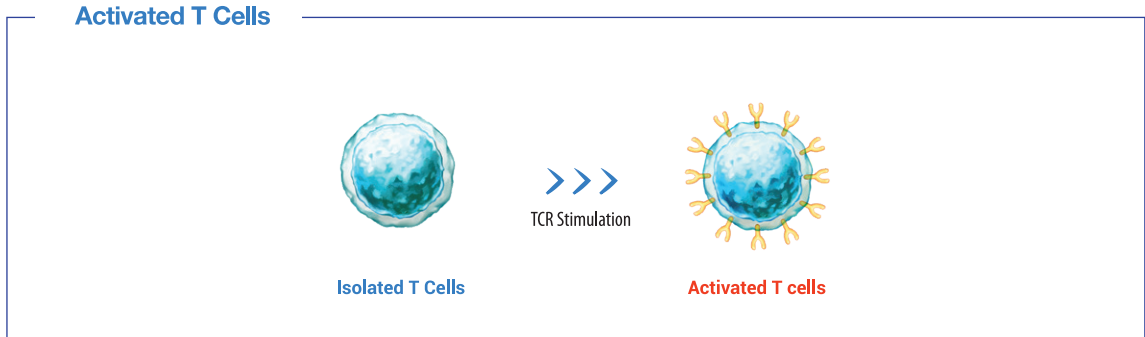

$y = 1.0196x - 27468$
$R^2 = 0.9962$

Repeatability

The samples of low, medium, and high concentration of isolated T cells were counted with ADAM.

	Low	Medium	High
MEAN	486,336	1,446,250	2,905,800
CV	4.97	3.05	1.65

Performance Test from Activated T Cells

Activated T Cells

TCR Stimulation

Isolated T Cells >>> **Activated T cells**

|	CD3⁺ cell	CD4⁺ cell	CD8⁺ cell
Control T cell	16.4	13.4	0.99
Activated T cell	76.9	17.6	46.3

The phenotypes of activated T cells which was used for performance evaluation - Flow cytometric analysis of CD25 expression on TCR stimulated (Activated T cell; bottom panel) or unstimulated (control T cell; upper panel) T cells.

Viability

Comparison of viability between flow cytometry and ADAM-CellT in Activated T cells.
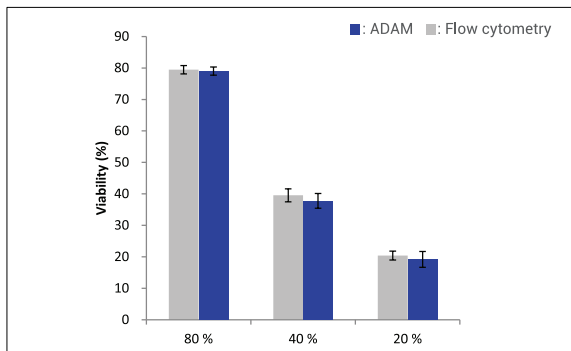
Repeatability

The samples of low, medium, and high concentration of activated T cells were counted with ADAM.

|	Low	Medium	High
MEAN	514,470	1,436,925	2,887,715
CV	9.46	6.47	5.05

21 CFR Part 11 Compliance

ADAM-CellT is an automated cell counter that is available in cGMP production environment. ADAM-CellT complies with 21 CFR Part 11 which is a regulation on electronic records and signatures for use in cGMP facilities. The data cannot be modified by any user. Every action of users is recorded in an audit trail which includes the date, time, and specific details of the action.
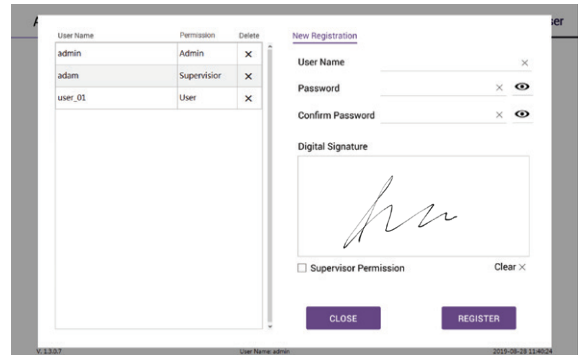
Electronic records

Audit trail, Data management to prevent data modification

<Log management>
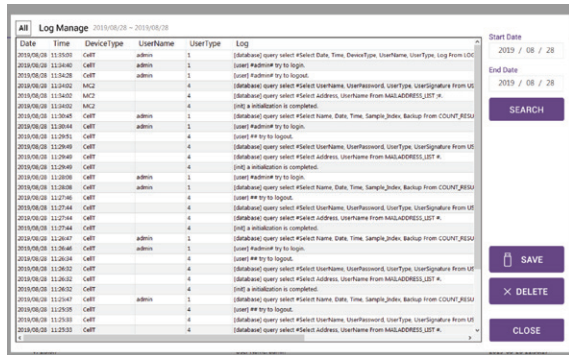
Electronic signatures

Equivalent to handwritten signatures on paper

<User management>

User management
Access level and rights of users

	Admin	Supervisor	User	Other
Access to ADAM-CellT	O	O	O	X
Access Data (Export)	O	△ (only data of supervisor)	△ (only data of user)	X
Create Account	O	△ (only for supervisor & user)	X	X
Access to Electronic Records	O	X	X	X
Access to Saved Document Records	O	X	X	X
Access to Deleted Document Records	O	X	X	X
F/W, S/W Update	O	O	X	X
Date/Time Setting	O	O	X	X

Specifications

ADAM-MC2, ADAM-CellT

Cat. No. ADAM-MC2 | ADAM-CellT

Hardware	
Focus	Auto-focusing
LED	4W Green LED
Weight	7.0 kg
Size (LxWxH)	277 x 276 x 270mm

AccuChip Kit

Cat. No. AD4K-200 (4 channel)

Performance	4channel
Analysis time	< 25 sec/test
Loading volume	13 μL
Measuring volume	3.4 μL
Measurement range	$5 \times 10^4 \sim 4 \times 10^6$ cells/mL (PI)
	$5 \times 10^4 \sim 2 \times 10^7$ cells/mL (AO/PI)

AD4K-200　　　AD4K-200AO

Ordering Information

Catalog Number	Product Name
ADAM-MC2	ADAM-MC2
ADAM-CellT	ADAM-CellT
AD4K-200*	AccuChip 4x Kit (PI) (4 channel, 200 slides/kit, PI viability kit)
AD4K-200AO	AccuChip 4x Kit (AO/PI) (4 channel, 200 slides/kit, AO/PI viability kit)

*AD4K-200: Total cell is counted by PI with lysis buffer.

Catalog Number	Product Name
ADR-1000*	Accustain Solution (PI Accustain solution)
ADR-1000AO	Accustain Solution (AO/PI Accustain solution)
ADB-500	ADAM Calibration Bead

*ADR-1000 : Total cell is counted by PI with lysis buffer.

ADAM **MC2&CellT**

Scan for more information.