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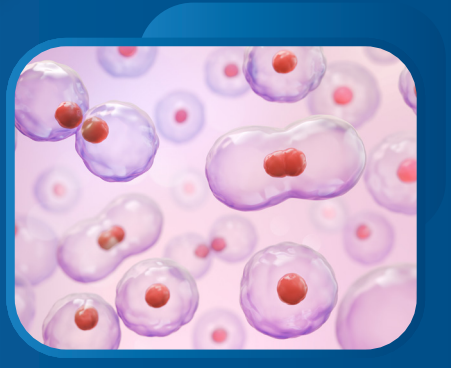
Esco ACC Series Automatic Cell Counting Analyzer

Next-Generation Precise Cell Counting Solution



INTRODUCTION

In the fields of cell therapy, biopharmaceuticals, and cutting-edge research, every cell matters. Traditional manual counting is limited by field of view, focus, and subjective judgment, which is time-consuming and labor-intensive, while conventional cell analyzers are overly sensitive to cell type and state. Are you also facing the following challenges?

Complex cell types/states: Difficulty in accurately counting immune cells, primary cells, or mixed cells?
Inconsistent results: Poor repeatability and unreliable data affecting experimental consistency?
High running cost: Expensive disposable counting slides becoming a long-term burden?
Tedious workflows: Lengthy steps for dilution, staining, and sedimentation reducing efficiency?
Regulatory compliance: Need to meet stringent data integrity standards such as 21 CFR Part 11 in production and quality control environments?

Esco ACC Series Automatic Cell Counting Analyzer combines the classic Coulter principle with advanced image analysis technology to deliver an accurate, efficient, compliant, and cost-effective cell counting and analysis solution.

• TECHNICAL PRICIPLE

Coulter Principle* — The "Gold Standard" for Counting Based on Physical Signals.

When cells pass through a precise micro-aperture, they instantaneously change the electrical resistance within the aperture, generating a voltage pulse proportional to the cell volume. By simply counting the pulses and measuring their intensity, accurate cell concentration and true cell volume are obtained.

KEY ADVANTAGES:

1. Unbiased Objective Results:
Independent of cell type, shape, refractive index, or operator experience.

2. True Volume Measurement:
Directly measures the hydrodynamic volume of cells, not projected area, providing data closer to biological reality.

3. Exceptional Accuracy and Repeatability:
CV (Coefficient of Variation) as low as <5%, far surpassing manual and conventional image-based counting methods.

**One of the counting methods recognized by ISO 20391-1:2018*

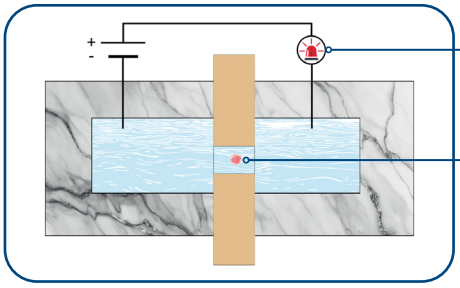
PRODUCT FAMILY: TAILORED FOR DIVERSE NEEDS

Model	ACC-100	ACC-200	ACC-300
Technology Principle	Coulter Method	Coulter Method + Bright-field Imaging	Coulter Method + Bright-field Imaging + Automated Staining
Core Features	• Accurate cell concentration • High-precision particle size detection • Cell volume/size distribution	• All features of ACC-100 • Cell viability analysis • Cell clustering and morphological analysis	• All features of ACC-200 • Integrated trypan blue automatic staining and mixing • "Start & Add Sample" Operation
Designated Application	Precision Counting Specialist	All-in-One Platform for Counting & Viability Analysis	Fully Automated End-to-End Solution
Applicable Scenarios	Scenarios requiring high precision counting and no need for vitality data, such as reference standard preparation.	Daily R&D and QC monitoring in comprehensive labs requiring multi-dimensional data count, viability and size distribution.	Standardized production QC (e.g., CAR-T, stem cell production) demanding ultimate efficiency and operational consistency.

• PRODUCT FEATURES

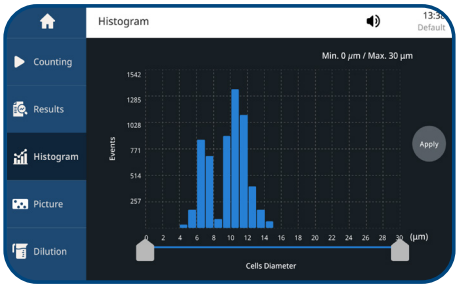
1. COMPLETE SAMPLE COUNTING, RELIABLE RESULTS

The Coulter method directly counts every cell passing through the micro-aperture, providing accurate cell concentration. Data can be directly used for downstream decisions, ensuring fundamental accuracy and comparability.



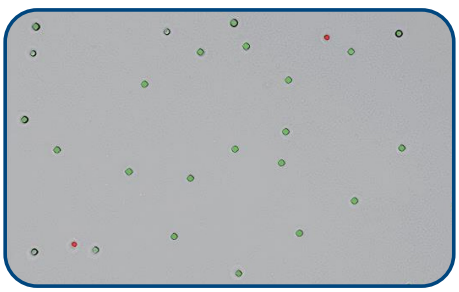
Every signal count and intensity is measured, with the signal intensity representing respective cell size

Cells flow through the micro-aperture, and each will have its representing signal



2. CELL TYPE-SHAPE AND CIRCULARITY-INDEPENDENT, EFFORTLESSLY HANDLES COMPLEX SAMPLES

Detection based solely on the true volume of cells, coupled with intelligent software gating, can accurately count the vast majority of cells to allow differentiation and counting of cell populations within specific size ranges from the same sample result. Ideal for complex scenarios like PBMC-induced/sorted cell counting and co-culture system analysis.

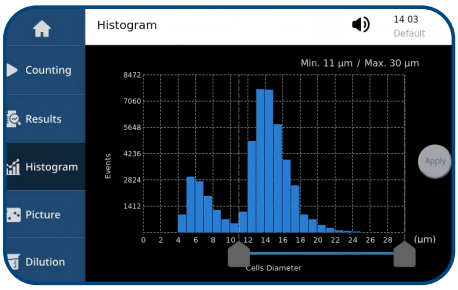


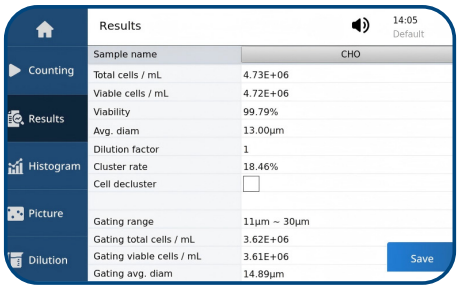
3. ACHIEVES ACCURATE COUNTING WHILE RESOLVING IMAGING ISSUES CAUSED BY SEVERE CELL STRATIFICATION IN SMALL CELLS LIKE PBMCs

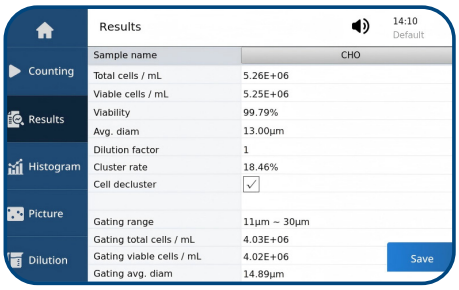
Microfluidic counting chip design paired with high-sensitivity circuitry enables particle size detection as low as 3 µm. CV for PBMC samples can be as low as 5%, ensuring exceptional repeatability for immune cell counting.

4. INTELLIGENT DEBRIS EXCLUSION AND ADVANCED DE-CLUSTERING FOR PURER DATA

Precise differentiation based on volume allows automatic exclusion of debris by setting thresholds (e.g., <5 μm). Advanced contour recognition algorithms effectively identify cell clusters and convert them into accurate cell counts, ensuring authenticity of concentration and viability results.

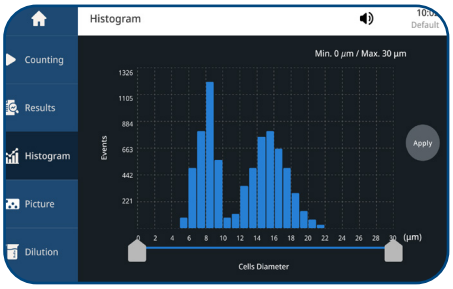




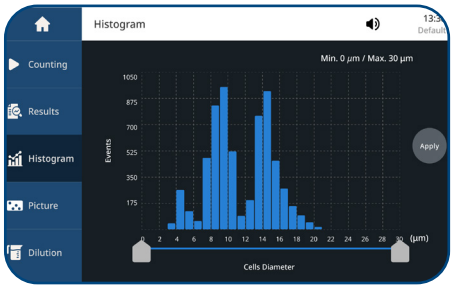


5. CLEAR HISTOGRAM RESULT DISPLAY (MIXED CELL POPULATION ANALYSIS), MEETING VARIOUS APPLICATION

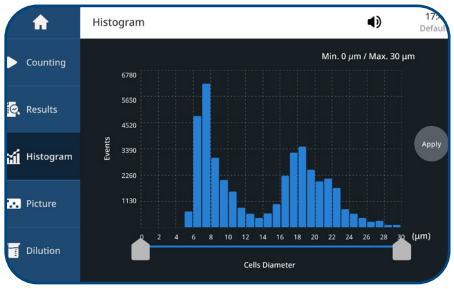
Clear volume distribution histograms allow selective counting of cells within specific size ranges via electronic thresholding (gating), distinguishing mixed cell populations or excluding debris.



Co-culture of immune cells and tumor cells



G418-treated cells



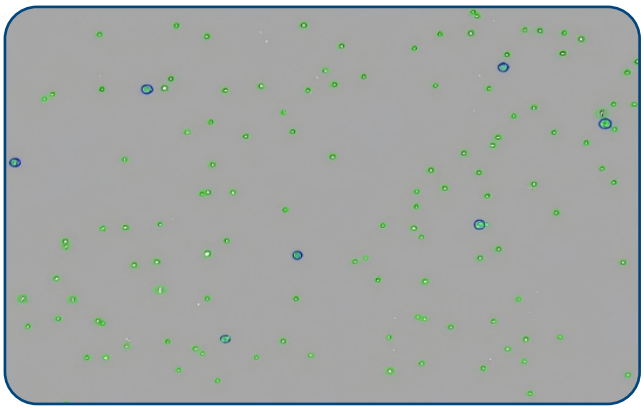
Histogram of cells after viral infection

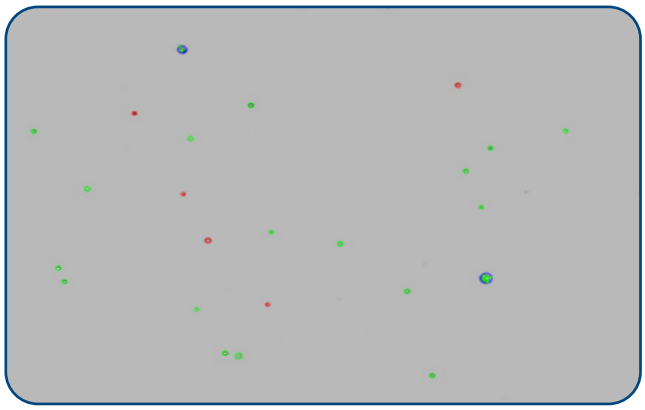
Application Scenarios: PBMC composition analysis, stem cell and differentiated cell co-culture, antibody drug development, vaccine production, tumor heterogeneity research, etc.

6. VIABILITY AND CLUSTER RATE ANALYSIS (ACC-200/300)

Combined with Trypan blue staining (automatic in ACC-300), 50 images captured during cell flow, imaging accurately distinguishes live /dead cells and cell clusters, providing live cell viability and cluster rate.

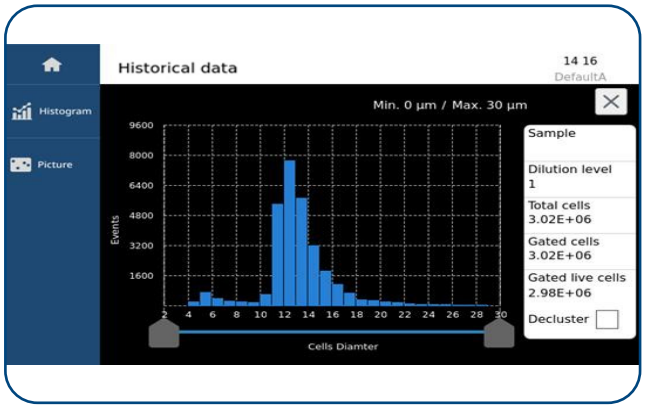
Green: live cells, Red: dead cells, Blue: cell clusters.

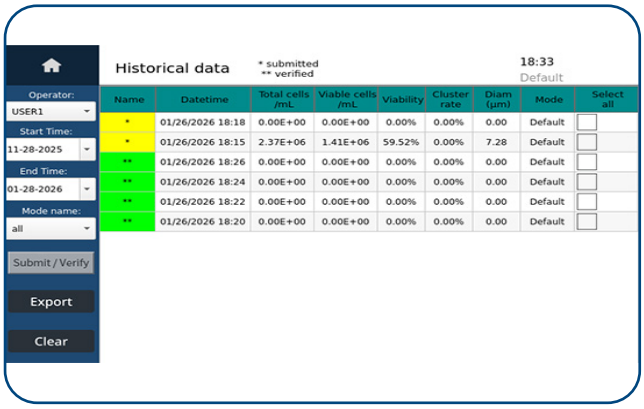




7. END-TO-END DATA TRACEABILITY

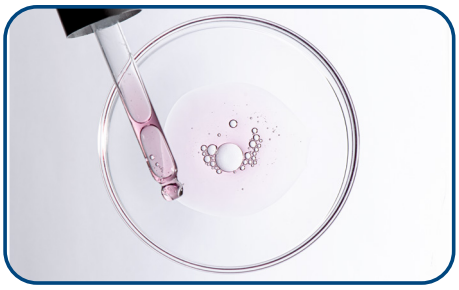
Sample results are automatically saved, including all raw data, size distribution, and cell images (if applicable). Comprehensive user permission management and electronic signature features enable one-click generation of compliant PDF reports, simplifying audit compliance and providing solid data support for product submissions (21 CFR part 11 software, optional add-on).





8. NO DISPOSABLE SLIDES, SIGNIFICANTLY REDUCES LONG-TERM COSTS

Esco cell counter features an in-built reusable microfluidic counting chip, detection can be completed using only sheath liquid and wash buffer. Cost-per-test is minimal, with long-term savings exceeding 50% on consumables.

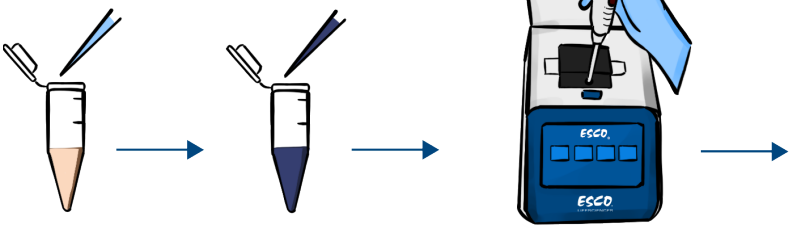


9. STREAMLINED WORKFLOW, DYNAMIC DETECTION

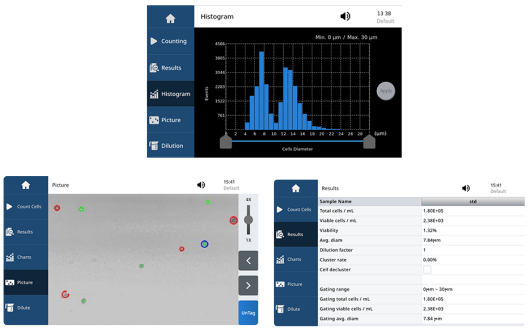
The instrument's fluidics are compatible with PBS and common cell culture media (e.g., RPMI-1640, DMEM), allowing direct sample dilution and loading with original medium. Real-time flow detection delivers immediate results post-loading, protecting sensitive cells from solution toxicity and off-target apoptosis while significantly improving detection efficiency and accuracy.

OPERATIONAL WORKFLOW

Comprehensive cell counting data as simple as one two three.



Cell Sample | **Mix Sample with dye (Viability detection)** | **Load sample**



Result

TECHNICAL SPECIFICATIONS

Model	ACC-100	ACC-200	ACC-300
Item code	2370001	2370002	2370003
Consumable chip	None		
Detectable Particle Size/Volume Range	3 - 30 μm		
Cell Concentration Range	1×10^4 – 1×10^8 cells/mL (For concentrations >1×10^7 cells/mL, recommended sample volume is 1 μL with 10× dilution)		
Sample Volume	1–10 μL		
Read Time	< 30 seconds/sample		
Viability Detection	N/A	Trypan blue exclusion method	
Repeatability (CV)	≤5.0%		
Linearity (R^2)	≥0.99		
Consumable	Sheath liquid and wash buffer, no disposable slides required.		
Data Compliance	Meets 21 CFR Part 11 requirements (user management, audit trail, electronic signature) *(optional)*		
Data Interface	USB data export		
Dimension	Main unit: 215 x 350 x 200 mm Liquid bottle tray: 50 x 250 x 150 mm (including liquid bottle)		
Weight	5.5 kg (12.12 lbs)		
Power	24V DC, 30W (Standard power adapter)		

CONSUMABLE AND ACCESSORIES

Model Code	Item code	Description
Sheath Liquid	2370005	Sheath Liquid 500 mL, Applicable to ACC-100, ACC-200, ACC-300
Wash Buffer	2370006	Wash Buffer 500 mL, Applicable to ACC-100, ACC-200, ACC-300
Trypan Blue	2370007	Trypan Blue 150 mL, Applicable to, ACC-300
QC Microspheres	2370008	QC Microspheres, 7 μm, 1 mL, Applicable to ACC-100, ACC-200, ACC-300
Liquid Bottle Tray	23700013	Liquid Bottle Tray, Applicable to ACC-100, ACC-200, ACC-300
21 CFR Software	23700014	21 CFR Software of Cell Counter, Applicable to ACC-100, ACC-200, ACC-300

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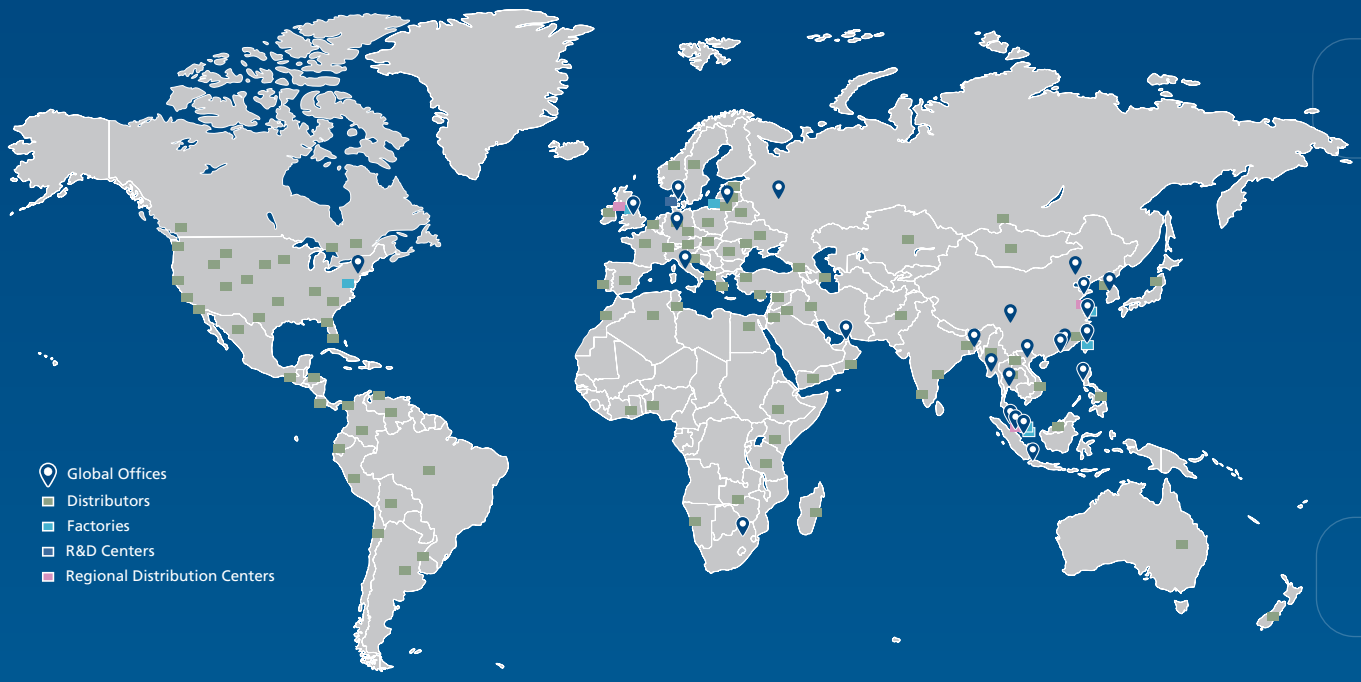
42 LOCATIONS IN 24 COUNTRIES ALL OVER THE WORLD



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