

CASY^{VIVO} Cell Counter & Analyzer - Powering Breakthroughs in Cell Research

Multi-Parameter Analysis of BMSC Heterogeneity for Biobanking and Therapy

Andrzejewska et al. (2019). Multi-Parameter Analysis of Biobanked Human BMSCs; *Frontiers in Immunology*, 10:2474. DOI: 10.3389/fimmu.2019.02474.

Bone Marrow Stromal Cells, BioBank; Therapy	
Index	SC6
Standardization	
Counting	X
Viability	X
Volume	X

The Challenge:

To understand the suitability of bone marrow-derived stromal cells (BMSCs) from diverse donors for regenerative medicine, researchers needed to comprehensively analyze cell number, viability, size, and volume at each culture passage, assessing the influence of donor age and comorbidities.

CASY's Contribution:

The CASY Cell Counter was crucial for precisely quantifying the bone marrow mononuclear cell (BM-MNC) fraction and, subsequently, BMSC number, viability, size, and volume at every passage. This multi-parameter data supported the characterization of BMSC morphology and immunophenotype, leading to the conclusion that in vitro aging, rather than in vivo donor age, primarily influences BMSC characteristics.

Key Benefits to Researchers:

- **Accurate Initial Cell Assessment:** Precisely quantify starting materials like BM-MNCs to minimize sampling bias and ensure reliable experimental foundations.
- **Comprehensive Growth Kinetics:** Accurately measure multiple parameters (number, viability, size, volume) at each passage for robust quantification of cell growth and behavior.
- **Reliable Morphology & Phenotyping:** Obtain consistent cell size and volume data to support detailed characterization of cell morphology and immunophenotype.
- **Essential for Biobanking Quality Control:** Provides reliable multi-parameter data, instrumental in ensuring the consistent quality of biobanked cell preparations for preclinical and clinical studies.

CASY Accurately Measures BMSC Cell Size and Volume, Revealing the Influence of Donor Age and Passage on Cellular Morphology

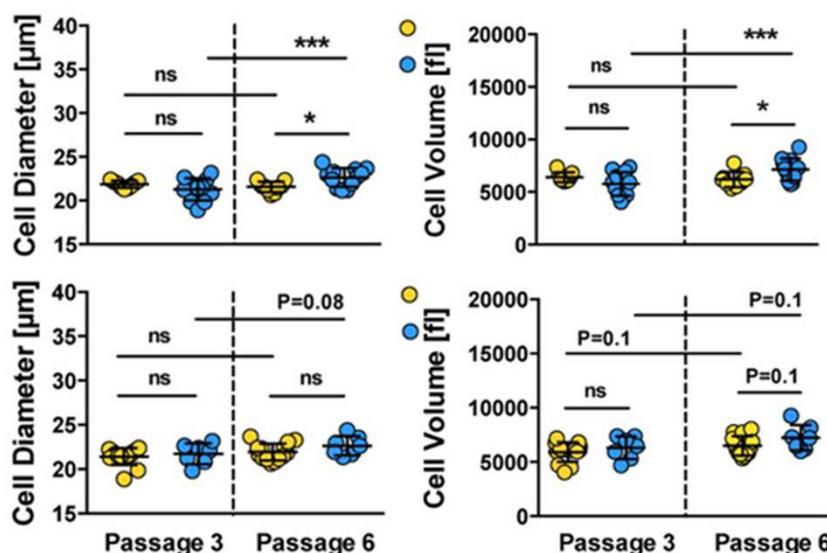


Fig 2: Morphology and immunophenotype of BMSCs. Analysis of cell size and cell volume of trypsin-detached BMSCs from adult vs. elderly and non-diabetic vs. diabetic donors.