

## CASY<sup>VIVO</sup> Cell Counter & Analyzer - Powering Breakthroughs in Cell Research

### Precise Kinetic Analysis of hMSC Recovery and Proliferation Post-Thaw

Pilbauerova et al. (2022). Innovative Approach in the Cryogenic Freezing Medium for Mesenchymal Stem Cells; **Biomolecules**, 12(5), 610. DOI: 10.3390/biom12050610.

Mesenchymal Stem Cells; MSC; Post Thaw	
Index	SC4
Standardization	
Counting	X
Viability	X
Volume	

#### The Challenge:

Quantitatively tracking the post-thaw recovery and long-term proliferation kinetics of hMSCs across various cryomedia to validate if high-molecular-weight hyaluronic acid (HMW-HA) can reduce toxic DMSO levels while maintaining viability.

#### CASY's Contribution:

CASY performed precise, label-free quantification of **total cell count** and **viability** for hADSCs immediately and 1-2 weeks post-thaw. This data proved that the 3% DMSO + 0.1% HMW-HA combination significantly improved cell survival and supported proliferation rescue over the 3% DMSO control.

#### Key Benefits to Researchers:

- Precision:** Provided accurate, automated quantification of the **total cell count** and long-term proliferation kinetics over a two-week period.
- Mechanism/Speed/Label-Free:** Employed **electronic pulse area analysis** and **current exclusion** to quickly and objectively assess cell membrane integrity and total viability.
- Impact/Validation:** Data validated the optimal low-DMSO combination (3% DMSO + 0.1% HMW-HA) by demonstrating maximal long-term proliferative rescue across hMSC sources.

#### CASY-Based Assessment of ADSC Survival and Expansion over 14 Days

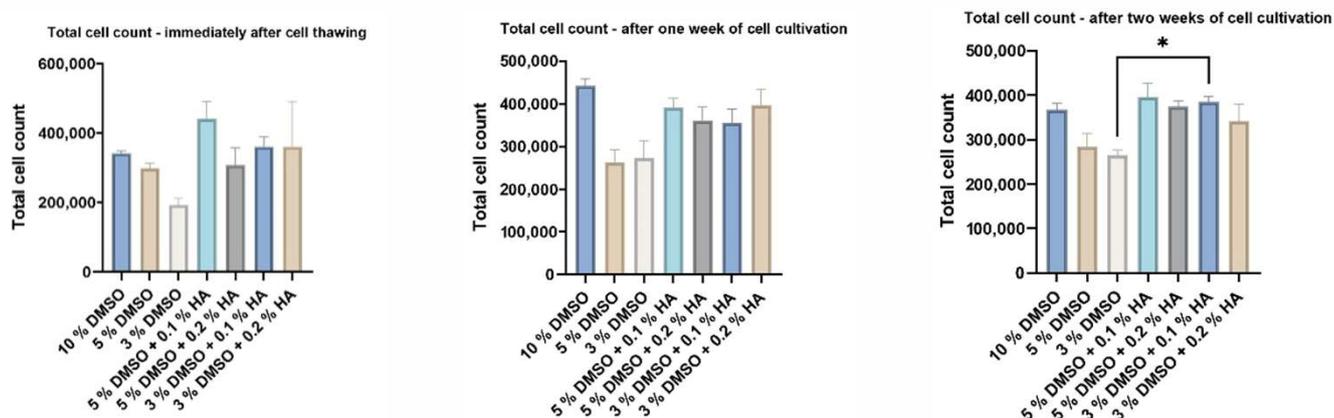


Figure 12. Total ADSCs count measured using CASY cell counter ...: (a) immediately after thawing; (b) after one week of cell cultivation; (c) after two weeks of cell cultivation. Data are presented as a mean and SD plotted as error bars. The statistical significances (\*  $p < 0.05$ ) were determined between control and experimental groups using Friedman's test followed by Dunn's multiple comparison test.