

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

Determination of Fibroblast Status by Measuring Cell Size

Oberringer et al. (2025). Endothelial Effects in the Elderly: Fibroblast Regulation in Soft Tissue Healing; **Journal of Cellular Physiology**, 240(1):e70099. DOI: 10.1002/jcp.70099.

Cell Culture, Fibroblast; pre-senescent	
Index	CC5
Standardization	
Counting	
Viability	X
Volume	X

The Challenge:

To verify if serial passaging induces replicative senescence in fibroblasts, requiring precise, quantitative measurement of morphological changes like cell size and viability.

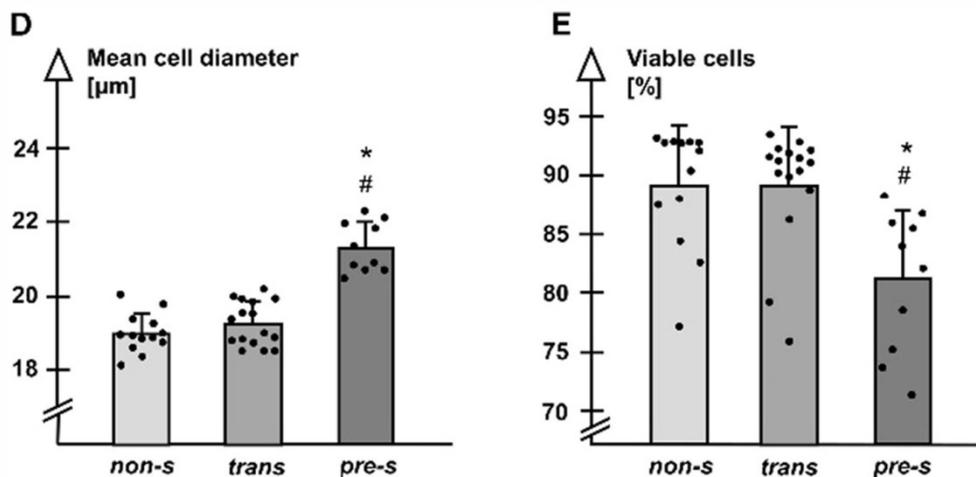
CASY's Contribution:

CASY provided label-free measurement of cell diameter and viability during serial passaging³. This data was crucial for the experimental design, demonstrating that pre-senescent (pre-s) fibroblasts have a significantly larger mean cell diameter (>20µm) and lower viability than non-senescent cells.

Key Benefits to Researchers:

- **Precision:** Delivered precise, quantitative data on mean cell diameter, which was the critical biomarker used to categorize the "pre-senescent" (pre-s) state for the study.
- **Objective & Label-Free:** Provided objective, label-free measurements of both cell viability and cell volume from the same sample, characterizing the phenotype without staining.
- **Validation:** The CASY data (increased size, decreased viability) was a key validation that the serial passaging model had successfully generated the pre-senescent phenotype.

Volumetric Characterization of Fibroblast Senescence: CASY-Validated Diameter and Viability Trends



▪ Fig(D) NHDF in pre-s cultures are larger compared to cells of trans cultures and to those in non-s cultures. (E) Pre-s cultures show a weaker viability. (D/E) Non-s: n = 13; trans: n = 16; pre-s: n = 10.