

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

CASY Metrics Reveal Dehydration and Calcium Imbalance in PV Red Blood Cells

Buks et al. (2022) Altered Ca²⁺ Homeostasis in Red Blood Cells of Polycythemia Vera Patients Following Disturbed Organelle Sorting during Terminal Erythropoiesis; *Cells* 2022, 11, 49

Red Blood Cells; RBC;	
Index	CC18
Standardization	X
Counting	
Viability	
Volume	X

The Challenge:

Understanding how the JAK2^{V617F} mutation in Polycythemia Vera patients alters calcium homeostasis and organelle sorting, potentially contributing to dehydration and thrombosis risk.

CASY's Contribution:

CASY tracked rapid RBC volume loss following Gárdos channel activation. The data proved that PV cells dehydrate faster than healthy controls, confirming that JAK2^{V617F} affects calcium homeostasis and ion channel function. This physical evidence of shrinkage validated the link between the mutation and cellular abnormalities.

Key Benefits to Researchers:

- **Volumetric Precision:** Automated measurement of cell volume changes at high temporal resolution to track dehydration kinetics.
- **Functional Validation:** Provided physical evidence of cellular shrinkage to support electrophysiological findings on ion channel activity.
- **Standardized Metrics:** Enabled objective comparison between healthy and diseased states through rapid, label-free cell size analysis.

