Unraveling Inflammation Resolution: Real-Time Precision in Microfluidic Migration Assays

Körner, A. et al. (2019) Sympathetic nervous system controls resolution of inflammation via regulation of repulsive guidance molecule A; Nature Communications 10:633

The Challenge:

Investigating the complex interplay of the sympathetic nervous system and RGM-A in inflammation resolution required real-time, precise evaluation of neutrophil and macrophage movement (chemotaxis and chemokinesis) in controlled microfluidic environments.

CASY's Contribution:

The CASY Cell Counter and Analyzer provided accurate and reproducible cell number and size measurements, essential for analyzing leukocyte responses in real-time within microfluidic migration chambers. This allowed researchers to gain detailed kinetic data on cell behavior and integrate CASY into an advanced, controlled experimental setup.

Key Benefits to Researchers:

- **Precise Cell Counting & Sizing:** Obtain accurate cell number and size measurements, crucial for analyzing nuanced leukocyte responses.
- **Real-time Migration Assessment:** Dynamically monitor cell migration in response to various gradients, providing detailed kinetic data on cellular behavior.
- **Versatility for Diverse Cell Types:** Effectively analyze the migration of various immune cells, including neutrophils and macrophages, broadening research applicability.
- **Reliable for Complex Setups:** Seamlessly integrate into advanced experimental environments like microfluidic chambers, demonstrating robust performance.

CASY Enables Precise Real-time Assessment of Neutrophil and Macrophage Chemotaxis in Microfluidic Chambers.

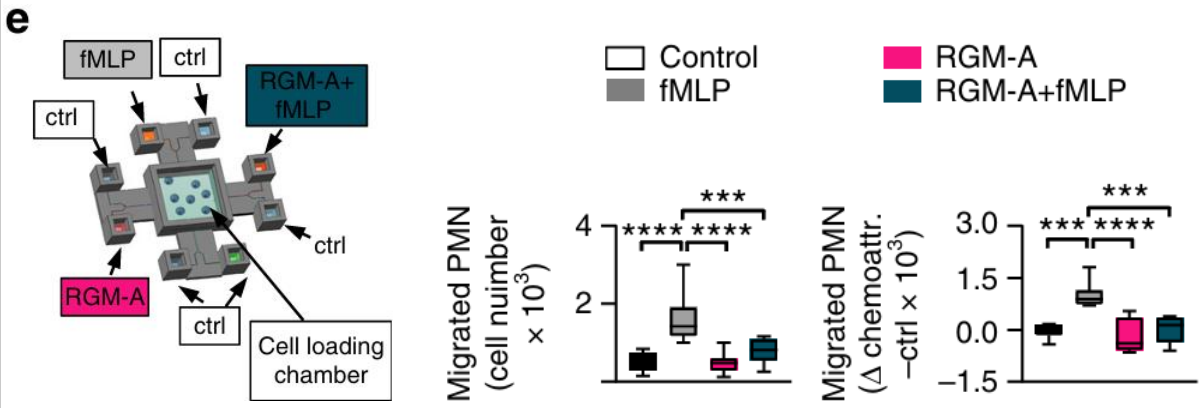

Fig. 1: RGM-A controls macrophage phenotype and regulates human PMN/macrophage chemotaxis and chemokinesis. e Schematic model of the microfluidic migration chamber. PMN and M1 MΦ chemotaxis were evaluated using a CASY cell counter (n=18)