Impedance Unplugged – Do Single Cells in Suspension Tell a Different Story?

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Electrical Cell Impedance Sensing (ECIS) has become a cornerstone technology for monitoring adherent mammalian and human cells in real time. However, its scope is inherently limited to cells that grow on surfaces. In contrast, Impedance Flow Cytometry (IFC) offers a fundamentally different approach: it analyzes individual cells in suspension, enabling high-throughput, label-free characterization at the single-cell level.

This talk introduces IFC to the ECIS community, highlighting the conceptual and technical differences between these two impedance-based methods. By comparing their working principles, we will explore how IFC complements ECIS — not only by extending impedance analysis to non-adherent cells, but also by unlocking new applications in both mammalian and microbial systems.

Selected case studies will illustrate how IFC can provide additional layers of insight, challenge existing assumptions, and open up new possibilities for cell-based assays. Whether as a complementary tool or a standalone platform, IFC invites us to rethink what impedance can reveal - when cells are no longer stuck to the surface.