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ICB PhD public presentations

VISCOELASTIC MICROFLUIDICS FOR CELL DEFORMABILITY MEASUREMENTS AND EXTRACELLULAR VESICLE ANALYSIS

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Project Summary: The fast growth of microfluidic applications based on viscoelastic fluids is a result of the unique fluid dynamics of these systems, enabling the creation of devices for health care and biological analysis. Herein, we exploit the viscoelastic fluids to develop image-based deformability cytometry for phenotyping cells at rates up to 100000 cells per second. The same platform is used for boosting T cell activation and proliferation to improve the current in vitro approaches of CAR-T cells expansion in adoptive immunotherapy. Moreover, we present a tunable approach that leverages viscoelastic microfluidics with cell mechanoporation, bringing intracellular delivery to the next level. Finally, we introduce viscoelastic-based platforms for extracellular vesicles focusing, isolation, and characterization through continuous and oscillatory flows.

CV. Memo obtained a B.Sc. in Mechanical Engineering from Sharif University of Technology (Iran) in 2015 and a M.Sc. in Material Sciences from Bilkent University (Turkey) in 2018. He started his doctoral studies at ETH Zurich under the supervision of Prof. Andrew deMello in June 2018.