

Quantitative biophysical characterization of fibroblast activation

M.D'Urso^{1,2} and N.A.Kurniawan^{1,2}

¹*Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

²*Institute for Complex Molecular System, Eindhoven University of Technology, Eindhoven, Netherlands*

Fibroblasts are one of the most widespread cell type throughout human organism and their activation can be triggered by both biochemical cues¹ and mechanotransductive cues, which allows cells to perceive mechanical signal from the environment². The environmental cues have a dynamic role affecting some of cellular behaviors, one of which is the fibroblast to myofibroblast transition (FMT)³, which cells undergo after an injury to a tissue take place, leading, if not correctly regulated, to loss of functioning and to stiffening of the tissue. In this project, we focus on characterizing the influence of different mechanical and physical cues from the environment, and particularly the simultaneous presence of some of them, on FMT. The latter is especially relevant because, until now, these cues are mostly investigated individually, while in vivo they act simultaneously. We will present our novel experimental setup to subject fibroblasts to controlled combinations of environmental cues and our in vitro module that allows quantifications of how these cues affect cellular parameters throughout the FMT.

References

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