

Lateral force transducer on epithelial monolayers based on polymer structures

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Epithelial cells transmit signals through chemical and mechanical signals during different processes like wound healing. [1][2] Several studies have been done to investigate the mechanical forces transmitted through the extracellular matrix with techniques like traction force microscopy, where the passive reaction of the cells has been explored but an active force interaction.[3][4] We propose a method to interact with the epithelial cells conserving the integrity of the monolayer. Based on deformable environments and a stretcher device, the force can be transmitted directly to the lateral junctions of the cells to imitate the signal of the monolayers. The captured deflection of the structures proved that the system is capable of interacting with the cells. This study is the base to explore the behavior of the cells under different stress conditions directly on the monolayer.

[1] Karsch et al., Biophysical Journal volume 113 (2017).

[2] Brugués et al. , Nature Physics 10, (2014).

[3] Teo et al., STAR Protocols volume 1, (2020).

[4] Hur et al., BMB Reports 2020 (2020).