NUS National University of Singapore

Department of Biological Sciences
Faculty of Science

SEMINAR

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Mechanosensitive Regulation of Cell-cell Adhesion Strength by Actin Dynamics Modulation

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Mechanical stress is increasingly being shown to be a potent modulator of cell–cell junctional morphologies in developmental and homeostatic processes. Intercellular force sensing is thus expected to be an important regulator of cell signalling and tissue integrity. In particular, the interplay between force transmission and adhesion strength regulation largely remains to be uncovered. We devised a suspended cell doublet assay to quantitatively assess the correlation between myosin II activity and local E-cadherin recruitment. The single junction of the doublet exhibited a stereotypical morphology, with E-cadherin accumulating into clusters of varied concentrations at the rim of the circular contact. This local recruitment into clusters derived from the sequestration of E-cadherin through a myosin-II-driven modulation of actin turnover. We exemplify how the regulation of actin dynamics provides a mechanism for the mechanosensitive response of cell contacts.

Artwork by Ann Nee, DBS, NUS