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Vimentin effects on mechanosensitivity of cells MINH TRI HO THANH, WILL LINTHICUM, SAKTHIKUMAR AMBADY, QI WEN, Worcester Polytech Inst — Vimentin is a type III intermediate filament protein that is used widely as a marker of the epithelial cancer. Yet, the role of vimentin in tumor formation and metastasis has not been studied in depth until recently. In this research, we would like to study the effect of knocking down vimentin expression on cell mechanosensitivity, which is critical for the development and metastasis of cancer. Control and vimentin knockdown (vim-) fibroblasts cultured on PAA gels with stiffness values ranging 2-20kPa. Using traction force microscopy, this study reveals that vim- fibroblasts are less responsive to the change in stiffness of the environment, demonstrated through lower rate of change in cell spreading area, degree of polarization, traction force, traction stress, and contractile moment. Furthermore, lower strain energy and surface tension in vim- fibroblasts might suggests that force transmission is impaired when vimentin expression is reduced.

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