

The more aggressive the softer – comparing the mechanical properties of breast cancer cells

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During tumor progression, cells change biochemically and morphologically. Adhesive properties, cell-to-cell contacts, and cytoskeletal arrangements occur, which influence the mechanical properties of tissue and cells. In many tissues, mechanical signaling plays a crucial role in maintaining integrity proper function. In cancer, these pathways get disrupted as the disease progresses. Here, we compare the mechanical and viscoelastic properties of the non-malignant breast epithelial cell line MCF10A to MCF7 breast cancer cells and to the triple-negative breast cancer cell line MDA-MB-231. Indentation and microrheology studies were performed via atomic force microscopy (AFM) force spectroscopy. Results show that both cancer cell lines appear much softer than the non-malignant MCF10A cells, with the triple-negative – the most aggressive cell line – to be the softest.