Mechanobiology of fibroblasts in tumor microenvironment

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Abstract

Microenvironmental control is a major restraining force that can prevent the growth of frankly malignant cells. During tumor development, fibroblasts initially can nip the outgrowth of disseminated cancer cells in the bud by direct contact. Upon tumor initiation and progression, fibroblasts can lose their tumor inhibitory capacity and promote tumor growth towards an aggressive phenotype.

We showed that targeting Rho GTPase signalling, key regulator of mechanical and adhesive properties of fibroblasts, switches their tumor-inhibitory capacity to promotion of tumor growth *in vitro* and *in vivo*. Our data indicate that Rho signalling is one of the key regulator of the switch from tumor-inhibitory to tumor-promoting fibroblasts. Taken together, these observations emphasize role of mechanical cues in interactions of tumor and the stroma.