MACC1 driven alterations in cellular biomechanics facilitate cell motility in glioblastoma

Tim Hohmann
Urszula Hohmann
Marc R. Kolbe
Mathias Dahlmann
Dennis Kobelt
Ulrike Stein
Faramarz Dehghani

Video Byte

**Keywords:** MACC1, Glioblastoma, Adhesion, Elasticity, Migration, Biomechanics, cancer, GBM, integrin, actin, microtubule, cytoskeleton, Cell Communication and Signaling

**DOI:** https://doi.org/10.21203/rs.3.rs-100903/v1

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Abstract

Glioblastoma (GBM), an aggressive cancer in the brain or spinal cord, is a devastating diagnosis. Although therapies exist, GBM has a poor prognosis, with a median survival of only 14-15 months after diagnosis. Key to its aggressiveness is the degree to which migrating GBM cells infiltrate adjacent brain tissue. GBM cells express the protein MACC1, which is a marker of metastasis and tumor cell migration. Unfortunately, how GBM cells learn to migrate is unclear. A recent study used live-cell and atomic force microscopy to evaluate cell migration and mechanical properties of GBM cells overexpressing MACC1. The results showed that MACC1 increased the migratory speed and elasticity of GBM cells while it decreased cell-cell adhesion and inhibited aggregation. MACC1-overexpressing cells also had specific increases in protrusive actin, allowing the cells to adhere to laminin. These results suggest that targeting MACC1 expression may inhibit GBM cell migration, improving treatment outcomes for this difficult disease.