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## Title

Impact of Compartmentalization and Cell Shape on Signaling Pathways in Cancer

## Abstract

Cancer cells often present themselves as highly heterogeneous, with strongly varying shapes. Moreover, the shape can dynamically change, for instance, during cell migration. We present a 3D modeling framework to investigate the impact of cell shape on signaling pathways which involve membrane bound molecules, which are indeed most signaling pathways. Due to the spatial separation of the molecules involved in such pathways, shape changes can directly impact the dynamics of these pathways. We show how Rho GTPase signaling, crucial in cytoskeletal regulation, is influenced by shape and enables migrating cells with different shapes to react differently to external signals. Moreover, YAP/TAZ signaling, known to be regulated by Rho GTPases, is thus also directly impacted by cell shape.