Cytoskeletal signaling events lie at the nexus of development and cancer

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Video Byte

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Abstract

Our cells' behavior depends on their underlying structure – the cytoskeleton. A dynamic network of protein filaments and tubules, the cytoskeleton drives motion. It is also central to cell development – and cancer. One protein at the center of cytoskeletal events is Merlin. Like other FERM-family proteins, Merlin mediates interactions between actin and transmembrane receptors, translating signaling into motion, adhesion, and growth regulation. Because it regulates such essential pathways, Merlin has a dual role in human biology. Its connection to the cytoskeleton is essential for embryonic development. and the signaling pathways it orchestrates are required for cell differentiation in later stages of development. At the same time, Merlin also maintains appropriate cell signaling levels and growth, preventing cancer progression. Further studies will shed light on Merlin's role in different contexts, improving our understanding of therapeutic strategies for disorders of both development and cancer.