The emerging role of the KCTD proteins in cancer

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Video Byte

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Abstract

New genes involved in tumorigenesis are constantly being discovered. Potassium Channel Tetramerization Domain (KCTD)-containing proteins have historically been involved in neurodevelopmental and neuropsychiatric disorders, obesity, or signal transduction pathway modulation. Recently, this diverse group of proteins has been shown to be linked to cancer. KCTD proteins share a conserved BTB domain that allows for protein-protein interactions. Ever-growing evidence suggests that these proteins are involved in protein degradation as well as a multitude of other biological functions in different cancers. Through their BTB domain, most KCTD proteins act as adapters to selectively recruit proteins for ubiquitination and degradation. But non-protein-degradation roles in DNA replication and repair, transcription, cell cycle control, tumor suppression, and tumorigenesis have also been found. Due to the wide array of cellular processes that KCTD proteins are potentially involved in, understanding their exact roles in tumorigenesis is difficult. Although many KCTD proteins remain to be characterized, this group of proteins may prove to be an important tool in our arsenal against cancer.