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Hedgehog/GLI signaling in tumor immunity - new therapeutic opportunities and clinical implications

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Video Byte

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Abstract

Cancer occurs when the body's cells corrupt normal growth pathways. One such pathway is the Hedgehog/Glioma-associated oncogene (HH/GLI) pathway. While the pathway is critical for normal development and health in mammals, uncontrolled activation of the pathway can contribute to cancer development. HH/GLI signaling has been implicated in a wide variety of cancers, making it an attractive target for cancer therapies, but side effects and drug resistance have limited the use of HH/GLI pathway inhibitors, and improved treatment strategies are needed. A new review examines HH/GLI signaling in the context of immunosuppression and immune evasion. Critically, HH/GLI signaling can impair the immune response against a tumor. Here, the pathway drives the formation of regulatory T cells and immune checkpoints, which effectively inhibit the anti-tumoral immune response. But at the same time, the HH/GLI pathway interacts with pro-inflammatory signals to promote the division and survival of cancer cells. Additionally, HH/GLI signaling can also downregulate molecules on cancer cells that would help activate immune cells, evading the immune response. The dual role of the HH/GLI signaling pathway makes effective intervention complex, but better understanding the molecular basis for its effects will help us to develop more precise and effective cancer therapies.