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1: [Cancer Cell](#). 2008 Aug 12;14(2):123-34. [Related Articles, Links](#)

**Acquisition of granule neuron precursor identity is a critical determinant of progenitor cell competence to form Shh-induced medulloblastoma.**

[Schüller U](#), [Heine VM](#), [Mao J](#), [Kho AT](#), [Dillon AK](#), [Han YG](#), [Huillard E](#), [Sun T](#), [Ligon AH](#), [Qian Y](#), [Ma Q](#), [Alvarez-Buylla A](#), [McMahon AP](#), [Rowitch DH](#), [Ligon KL](#).

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Whether the brain tumor medulloblastoma originates from stem cells or restricted progenitor cells is unclear. To investigate this, we activated oncogenic Hedgehog (Hh) signaling in multipotent and lineage-restricted central nervous system (CNS) progenitors. We observed that normal unipotent cerebellar granule neuron precursors (CGNPs) derive from hGFAP(+) and Olig2(+) rhombic lip progenitors. Hh activation in a spectrum of early- and late-stage CNS progenitors generated similar medulloblastomas, but not other brain cancers, indicating that acquisition of CGNP identity is essential for tumorigenesis. We show in human and mouse medulloblastoma that cells expressing the glia-associated markers Gfap and Olig2 are neoplastic and retain features of embryonic-type granule lineage progenitors. Thus, oncogenic Hh signaling promotes medulloblastoma from lineage-restricted granule cell progenitors.

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