GLI2-regulated ion-channel genes as potential targets of SHH medulloblastoma

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Medulloblastoma (MB) is the most common malignant childhood brain tumor and the leading cause of pediatric cancer deaths. About 30% of MB, which account for the majority of infant (≤ 3 years old) and adult (≥ 18 years old) MB, exhibit a gene signature of Hedgehog (Hh) pathway activation and are classified as the Sonic Hedgehog-subgroup of MB (SHH MB). My laboratory has generated several novel clinically relevant mouse models of MB and demonstrated that GLI2, the major transcriptional activator of the Hh pathway, plays central role in SHH MB tumorigenesis. By performing RNA-Seq and GLI2 ChIP-Seq analyses, we identified the targetome of GLI2 in mouse MB including many ion channel genes. Analysis of human MB expression microarray data revealed that some of these genes are also highly expressed in human SHH MB. Currently, we are exploring the therapeutic potential of these ion channels in targeting MB. The results of this study will be discussed.