

[Proc Amer Assoc Cancer Res, Volume 47, 2006]

**Tumor Biology 38: Molecular and Cellular Pathways in Pediatric Cancers
Abstract #5640**

The cancer stem cell niche in medulloblastoma.

Christopher R. Calabrese, Helen Poppleton, Andrew Davidoff and Richard J. Gilbertson

St. Jude Children's Research Hospital, Memphis, TN

Recent data from our group and those of others indicate that glial and neuroectodermal brain tumors are maintained by rare fractions of cancer stem cells (CSC) that express the neural stem cell markers CD133 and Nestin (Singh SK *et. al.*, Nature, 2004; Taylor MD *et. al.*, Cancer Cell 2005). In the normal brain, neural stem cells lie within a vascular niche in which endothelial cells release soluble factors that stimulate stem cell self-renewal and inhibit differentiation. Here, we show that endothelial cells similarly maintain the self-renewal capacity and undifferentiated phenotype of medulloblastoma (MB) stem cells and that these cells are closely associated with tumor capillaries *in vivo*. We further show that ERBB2 signaling, an indicator of poor prognosis in MB patients, promotes VEGF production, vascular endothelial cell proliferation and angiogenesis in tumors and that these processes can be effectively inhibited *in vitro* and *in vivo*. These data show that endothelial cells provide a critical component of the cancer stem cell niche in MB and identify this niche as an important new target for novel therapeutic approaches.

Services

- ▶ [Similar articles in this journal](#)
- ▶ [Download to citation manager](#)

Citing Articles

- ▶ [Citing Articles via Google Scholar](#)

Google Scholar

- ▶ [Articles by Calabrese, C. R.](#)
- ▶ [Articles by Gilbertson, R. J.](#)
- ▶ [Search for Related Content](#)

PubMed

- ▶ [Articles by Calabrese, C. R.](#)
- ▶ [Articles by Gilbertson, R. J.](#)

Cancer Research	Clinical Cancer Research
Cancer Epidemiology Biomarkers & Prevention	Molecular Cancer Therapeutics
Molecular Cancer Research	Cell Growth & Differentiation