CD109

Unresectable glioblastoma (GBM) cells in the invading tumor edge can act as seeds for recurrence. The molecular and phenotypic properties of these cells remain elusive.

Minata et al., report that the invading edge and tumor core have two distinct types of glioma stem-like cells (GSCs) that resemble proneural (PN) and mesenchymal (MES) subtypes, respectively. Upon exposure to ionizing radiation (IR), GSCs, initially enriched for a CD133+ PN signature, transition to a CD109+ MES subtype in a C/EBP-β-dependent manner.

This gene expression analysis of paired cohorts of patients with primary and recurrent GBMs identified a CD133-to-CD109 shift in tumors with an MES recurrence. Patient-derived CD133-/CD109+ cells are highly enriched with clonogenic, tumor-initiating, and radiation-resistant properties, and silencing CD109 significantly inhibits these phenotypes. We also report a conserved regulation of YAP/TAZ pathways by CD109 that could be a therapeutic target in GBM [1)].

1)
Minata M, Audia A, Shi J, Lu S, Bernstock J, Pavlyukov MS, Das A, Kim SH, Shin YJ, Lee Y, Koo H, Snigdha K, Waghmare I, Guo X, Mohyeldin A, Gallego-Perez D, Wang J, Chen D, Cheng P, Mukheef F, Contreras M, Reyes JF, Vaillant B, Sulman EP, Cheng SY, Markert JM, Tannous BA, Lu X, Kango-Singh M, Lee LJ, Nam DH, Nakano I, Bhat KP. Phenotypic Plasticity of Invasive Edge Glioma Stem-like Cells in Response to Ionizing Radiation. Cell Rep. 2019 Feb 12;26(7):1893-1905.e7. doi: 10.1016/j.celrep.2019.01.076. PubMed PMID: 30759398.