

World Health Organization grade 3 meningioma

[Papillary meningioma](#)

[Rhabdoid meningioma](#)

[Anaplastic meningioma](#)

[Mast cells](#) (MCs) were present in as many as 90 % of all high grade [meningiomas](#) mainly found in the perivascular areas of the tumor. A correlation between [peritumoral edema](#) and MCs was found.

Accumulation of MCs in meningiomas could contribute to the aggressiveness of tumors and to brain inflammation that may be involved in the pathogenesis of additional disorders ¹⁾.

Treatment

[World Health Organization grade 3 meningioma treatment.](#)

Outcome

High-grade [meningioma](#) has an unsatisfactory [outcome](#) despite surgery and [postoperative radiotherapy](#); however, the factors driving its [malignancy](#) and [recurrence](#) remain largely unknown, which limits the development of systemic [treatments](#). [Single-cell RNA sequencing \(scRNA-Seq\)](#) technology is a powerful tool for studying intratumoral cellular heterogeneity and revealing the roles of various cell types in oncogenesis.

In a study, by Huang et al. scRNA-Seq is used to identify a unique initiating cell subpopulation ([SULT1E1+](#)) in high-grade meningiomas. This subpopulation modulates the polarization of M2-type macrophages and promotes [meningioma progression](#) and [meningioma recurrence](#). A novel patient-derived meningioma organoid (MO) model is established to characterize this unique subpopulation. The resulting MOs fully retain the aggressiveness of SULT1E1+ and exhibit invasiveness in the brain after orthotopic transplantation. By targeting SULT1E1+ in MOs, the synthetic compound SRT1720 is identified as a potential agent for systemic treatment and radiation sensitization. These findings shed light on the mechanism underlying the malignancy of high-grade meningiomas and provide a novel therapeutic target for refractory high-grade meningioma ²⁾.

¹⁾

Polyzoidis S, Koletsa T, Panagiotidou S, Ashkan K, Theoharides TC. Mast cells in meningiomas and brain inflammation. J Neuroinflammation. 2015 Sep 17;12(1):170. doi: 10.1186/s12974-015-0388-3. PubMed PMID: 26377554.

²⁾

Huang M, Xu S, Li Y, Shang L, Zhan X, Qin C, Su J, Zhao Z, He Y, Qin L, Zhao W, Long W, Liu Q. Novel Human Meningioma Organoids Recapitulate the Aggressiveness of the Initiating Cell Subpopulations Identified by ScRNA-Seq. Adv Sci (Weinh). 2023 Mar 30:e2205525. doi: 10.1002/adv.202205525. Epub ahead of print. PMID: 36994665.

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