Docket #: S25-232

Targeting Serotonergic Receptors in Glioma

High-grade gliomas, such as glioblastoma and diffuse midline glioma, are currently incurable diseases with an urgent need for novel therapeutic approaches. Widespread in the brain are serotonergic neurons that influence a broad range of physiological and behavioral functions in both health and disease. Thus, there is a role for serotonergic neurons in glioma pathophysiology.

The Monje Lab at Stanford pioneered the investigation on the influence of serotonergic neuronal activity. The inventors demonstrated that activation of the serotonergic receptor HTR2A induces a strong proliferative response in glioma cells. Genetic knockout and pharmacological inhibition of HTR2A significantly prolonged survival in glioma-bearing mice. This highlights the potential for clinical translation of serotonergic receptor antagonists as a therapeutic strategy.

Stage of Development
Research - in vivo

Applications

- Biotechnology
- Glioma treatment
- Neuroscience research tool

Advantages

- Uses serotonergic receptor antagonists as a treatment for glioma

Publications

- Drexler, Richard, Belgin Yalç?n, Rebecca Mancusi, Abigail Rogers, Kiarash Shamardani, Pamelyn J. Woo, Alexandre Ravel et al. " Serotonergic neuron-glioma interactions drive high-grade glioma pathophysiology." bioRxiv (2025): 2025-12.

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