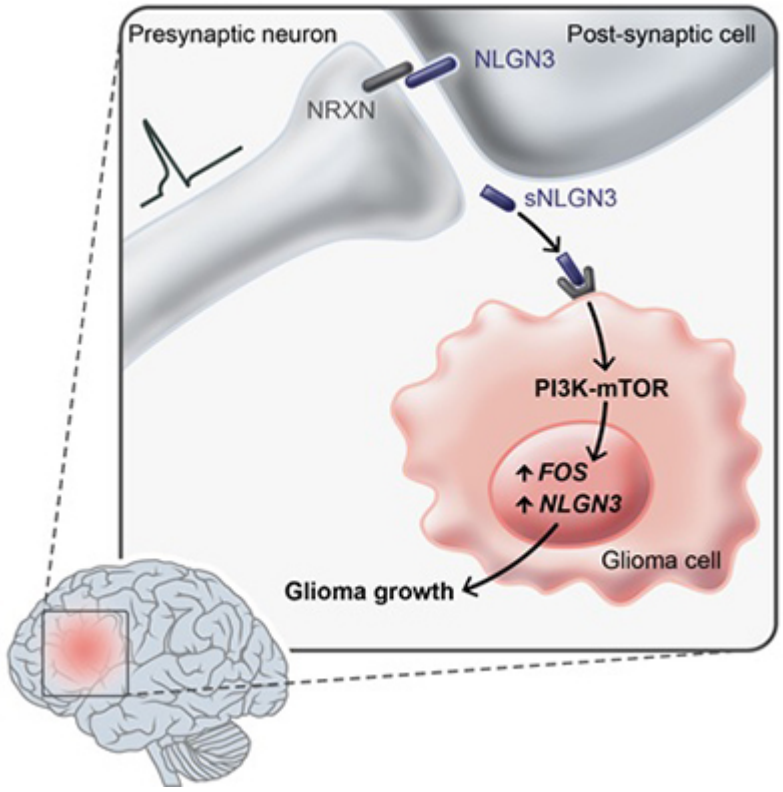
Docket #: S14-408

Therapeutic targets for glioma tumors

Researchers in Prof. Michelle Monje-Deisseroth's laboratory have discovered a previously unknown mechanism for glioma tumor growth and invasion that defines a novel set of therapeutic targets. This approach is based on the finding that high-grade glioma (HGG) growth is promoted by neuronal-activity and its associated synaptic factors. HGG is the leading cause of brain cancer death in children and adults and current therapies are inadequate for this fatal orphan disease. Therapeutic agents that disrupt the tumor microenvironment by inhibiting the activity of neuronal activity-regulated proteins (e.g. neuroligin-3, brain-derived neurotrophic factor or brevican) could provide a first-in-class approach for treating brain cancer or neurological dysfunction.

Figure



Stage of Research
Using an in vivo mouse xenograft model together with optogenetic techniques, the inventors have demonstrated that active neurons promote HGG proliferation and growth and that neuroligin-3 expression levels in human HGG negatively correlated with patient survival.

Applications

- **Cancer drug discovery** – targets for therapeutic agents to treat glioma/glioblastoma by preventing tumor cell survival and proliferation

Advantages

- **Unmet medical need** – current glioma therapies are inadequate and many HGG are incurable diseases that lead to neurological demise and death
- **First in class approach** - unique therapeutic targets

Publications

- Michelle Monje, Humsa Venkatesh, Viola Caretti, Tessa Johung, Alyssa Noll, Hannes Vogel, Parag Mallick, Markus Bredel, Neuronal activity-regulated secretion of neuroligin-3 promotes glioma growth,Neurology April 6, 2015 vol. 84 no. 14 Supplement S43.003.

Patents

- Published Application: 20160222100
- Issued: 10,377,818 (USA)

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