Docket #: S17-248

Therapeutic targets to limit high-grade glioma spread

Researchers in Dr. Michelle Monje-Deisseroth's lab at Stanford have identified therapeutic targets for drug development to limit the spread of high-grade gliomas (HGGs). HGGs, including glioblastoma and diffuse intrinsic pontine glioma, are a group of brain cancers with dire prognosis. They frequently invade a region of the brain called the subventricular zone (SVZ) and this spread correlates with decreased survival. Currently the only therapeutic approach to limit spreading into the SVZ is not optimal as it involves irradiation of the SVZ, which can cause very serious side effects. Thus, new targeted therapeutic strategies are needed.

The inventors have determined that SVZ invasion is promoted by the secretion of pleiotrophin, which forms a complex with a group of proteins that acts as a chemoattractant for the glioma to the SVZ. Therapeutic agents that inhibit this chemoattractant complex, such as inhibitory nucleic acids, thus provide a strategy for treating HGGs. This technology provides potential new targets for drug development to limit the spread of deadly brain cancers.

Figure

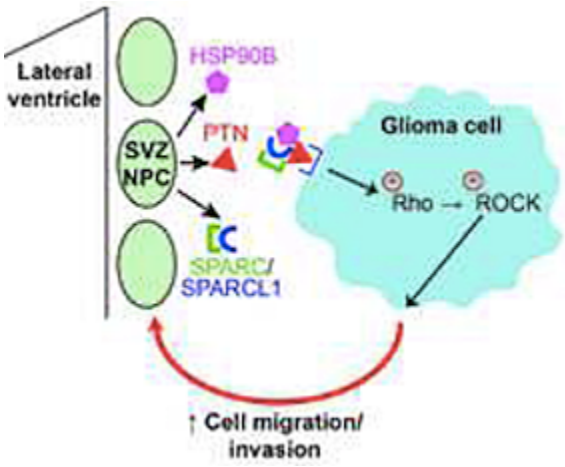


Figure Description: Pleiotrophin (PTN) is secreted in the SVZ and with its binding partners promotes glioma cell migration and invasion of the SVZ. (*Image courtesy the Monje Lab*)

Stage of development

The inventors have identified pleiotrophin and its binding partners as key proteins secreted by cells in the SVZ that are necessary and sufficient for glioma invasion of the SVZ.

Applications

- Drug development- new targets for development of therapeutics to treat gliomas
- Inhibitory nucleic acids (shRNA, siRNA, miRNA, ASOs) to treat HGG spread

Advantages

- Unmet medical need- existing therapeutic strategy is non-optimal
- Provides new targets for therapeutic development

Publications

- Qin, E. Y., Cooper, D. D., Abbott, K. L., Lennon, J., Nagaraja, S., Mackay, A., Jones, C., Vogel, H., Jackson, P.K., & Monje, M. (2017). Neural precursor-derived pleiotrophin mediates subventricular zone invasion by glioma. *Cell, 170*(5), 845-859.

Patents

- Published Application: 20190055556
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