

An MRI based computational diagnostic tool for detecting EGFRvIII in Glioblastoma (GBM)

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Inventors

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STAGE OF DEVELOPMENT

Tested in a cohort of 142 patients

INTELLECTUAL PROPERTY

US Application filed 4/21/2017

REFERENCE MEDIA

Bilello, Michel, et al. [NeuroImage: Clinical 12 \(2016\): 34-40.](#)

Macyszyn, Luke, et al. [Neuro-oncology 18.3 \(2016\): 417-425](#)

Tykocinski, Elana S., et al. [Neuro-oncology 14.5 \(2012\): 613-623.](#)

DESIRED PARTNERSHIP

License
Co-development

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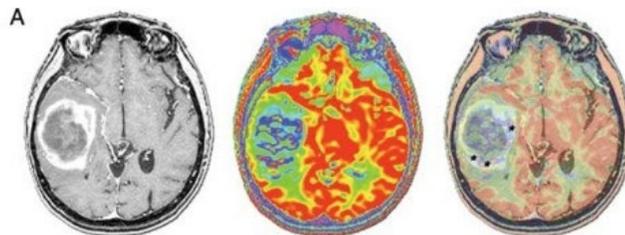
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Technology

GBM has a highly variable molecular, spatial and temporal fingerprint making analysis difficult. Current methods require tissue biopsies which fail to capture the heterogeneity of GBM, and damage healthy tissue. Epidermal growth factor receptor (EGFR), a cell growth regulator, is mutated and/or overexpressed in most intractable GBM cases. The EGFRvIII mutation is expressed only in cancer tissue. Detecting EGFRvIII is valuable for diagnosing and determining treatment options; however, invasive procedures are required and consistent follow-ups are nearly impossible. An accurate, reproducible, non-invasive method for diagnosis of GBM with EGFRvIII mutation is needed.

The Inventors have developed a non-invasive imaging marker of EGFRvIII by using dynamic susceptibility contrast MRI (DSC-MRI) and advanced statistical procedures, where the spatial and temporal location of EGFRvIII can be accurately determined by patients' MRI phenotype. This resolves the need of repeated biopsies and provides useful preoperative information on the mutation status as well as the means for potential continuous non-invasive monitoring of the mutation during and after therapy.



Black hatch marks (right) indicate representative highest EGFRvIII expression.

Advantages

- Useful in pre-operative evaluation, enabling decisions on aggressiveness of treatment
- Robust, non-invasive and easy to perform test
- Enable post-operative monitoring of EGFRvIII expressing regions over time

Application

- A diagnostic tool for treatment and monitoring of GBM