

## A Novel Gene Associated with Glioblastoma

### Background

Glioma is the third leading cause of cancer deaths in young adults, with some 35,000 new cases annually. The most malignant and common of brain tumors, Glioblastoma multiforme (GBM), has a median survival of less than one year. Despite extensive research the etiology of GBM remains unknown, there are few reliable molecular or genetic markers, and diagnosis is based on histopathology with many limitations. Treatment options including surgery, radiotherapy, and chemotherapy are also inadequate. Since GBM is highly infiltrative surgery removes only part of the tumor, while the efficacy of radiotherapy and chemotherapy is limited by quiescent tumor cells that escape treatment. There is thus an urgent and unmet need for development of alternative, effective diagnostic and therapeutic approaches to glioma.

The classification of gliomas including GBM is difficult under current guidelines and available markers. Several tumor suppressor genes have been implicated in malignant glioma progression, but specific genes or gene products have not been identified to date. **The current invention identifies a novel gene product with applications in the diagnosis and potential for therapeutic treatment of malignant brain tumors including GBM.**

### Description of the Technology

We have identified an expressed sequence tag (EST) that is a molecular marker for the classification of malignant glioma and GBM, with potential application to assess and quantify a candidate's risk of progression into the malignant phenotype. Based on the analysis of RNA transcripts elevated during rodent glioblast transformation a novel gene has been identified that is associated with glioblast immortalization, an early step in the progression of malignant glioma. Subsequent analysis of the human homologue of this gene, termed GliTEN, mapped it to chromosome 10 locus q25. Genetic rearrangements of 10q25 are commonly linked to malignant glioma and GBM, although the presumed 10q25 tumor suppressor gene has yet to be identified. The potential role of GliTEN in tumor progression further suggests it may provide a molecular target for therapeutic intervention in malignant glioma progression.

### Advantages

- . •No definitive methods for tumor classification currently exist
- . •No definitive methods for GBM diagnosis currently exist
- . •Provides a reliable molecular marker
- . •Provides a therapeutic target for intervention in malignant glioma progression

### Applications

- . •Provides a method to diagnose and classify brain tumors including GBM
- . •To identify patients at risk for progression into malignant phenotype
- . •To develop diagnostic kits to detect GliTEN mRNA.
- . •For the generation of therapeutic or diagnostic monoclonal antibodies
- . •For the generation of therapeutic cDNA vectors for gene therapy
- . •For the generation of therapeutic RNA interference vectors for gene therapy

## **Deliverables**

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- . •Nucleotide sequence of EST
- . •Full length sequence of GliTEN
- . •Methods for PCR amplification to detect GliTEN

## **Patent Status**

- . •United state patent application and a CIP on the full length GliTEN gene.
- . •Application published on 03/06/2003 (Publication No.: US-2003-0044811 A1)

## **Licensing Opportunity**

- This technology is available for non-exclusive or exclusive license.

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