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Serum-based extracellular vesicle panel for detection for glioblastoma

A blood-based panel for diagnosing and tracking glioblastoma to improve patient outcomes

IP Status: PCT Pending; US Utility Pending; PCT Application No. PCT/US2023/084880; US Utility Application Number: 19/141,948

Applications

- Non-invasive glioblastoma diagnosis
- Non-invasive glioblastoma tumor monitoring

Key Benefits & Differentiators

- **Non-invasive:** Blood-based assay from a standard blood draw and does not require taking a tissue sample
- **Sensitive and specific tumor monitoring:** The biomarker panel was developed from the transcriptomic profile of patient-derived extracellular vesicles and can differentiate between treatment artifacts from tumor progression

Technology Overview

Glioblastoma is the most malignant form of cerebral gliomas and accounts for 17% of all primary brain tumors. Despite recent advances in the multimodal treatment of glioblastoma, the prognosis of it is still poor, with a median survival time of 12.1–14.6 months after diagnosis and a 5-year survival rate of less than 10%. Glioblastoma is mainly diagnosed through neuroimaging techniques (e.g., magnetic resonance imaging (MRI) or computer tomography (CT) scans) and tissue samples, but they all have limitations. Tissue biopsies are invasive and can only offer a snapshot of tumor evolution at a single time point. Biopsies are high risk procedures that can lead to brain swelling and hemorrhages. Additionally, repeated surgery and sampling in order to define the real molecular profile of the tumor progression is not feasible. Moreover, the lack of accessibility to some brain tumors hampers obtaining tissue samples. Imaging modalities are insufficient to distinguish true tumor progression from treatment artifacts that mimic progression; they are also expensive and time-consuming. Therefore, there is an unmet need for non-invasive, practical and flexible approaches for clinical management of glioblastoma.

Prof. Okay Saydam at the University of Minnesota has developed a serum-based panel for glioblastomas. This panel was developed by analyzing the transcriptomic signature of serum-derived extracellular vesicles (EVs) from 85 primary glioblastoma patients and comparing the results to 31 healthy donors' EVs. This approach identified several significant dysregulated markers which are highly sensitive and specific predictors in patients with wild-type IDH1 status detected in tumor tissues, MGMT promoter methylation in tumor tissues, and mutations in the p53 gene detected in tumor tissues. The assay only requires a standard blood draw, presenting a non-invasive alternative to existing diagnostic approaches. The glioblastoma-specific biomarker panel provides an opportunity to diagnose glioblastoma in early stages and follow a

Technology ID
2021-094

Category
All Technologies
Life Sciences/Biomarkers
Life Sciences/Diagnostics & Imaging
Life Sciences/Human Health

Learn more

patient's tumor status in serum samples using a regular clinical biochemistry laboratory.

Phase of Development

TRL: 2-3

Panel developed from n=85 patient and n=31 control donors

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

Researchers

- **Okay Saydam, MSc, PhD** Assistant Professor, Division of Pediatric Hematology and Oncology

References

1. Mut M, Adiguzel Z, Cakir-Aktas C, Hanalioğlu Ş, Gungor-Topcu G, Kiyga E, Isikay I, Sarac A, Soylemezoglu F, Strobel T, Ampudia-Mesias E, Cameron C, Aslan T, Tekirdas E, Hayran M, Oguz KK, Henzler C, Saydam N, Saydam O(2023) , https://www.mdpi.com/2072-6694/15/15/3782, https://www.mdpi.com/journal/cancers, 15, 3782