Clinical Utility of MicroRNAs as Diagnostic Biomarkers of Alzheimers Disease

https://neurodegenerationresearch.eu/survey/clinical-utility-of-micrornas-as-diagnostic-biomarkers-of-alzheimers-disease/

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Country

USA

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Clinical Utility of MicroRNAs as Diagnostic Biomarkers of Alzheimers Disease

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NIH (NIA)

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€ 1,849,104.59

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01/08/2013

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1

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

diagnostic biomarker, MicroRNAs, Alzheimer's Disease, Cerebrospinal Fluid, Dementia

Research Abstract
DESCRIPTION (provided by applicant): Alzheimer's disease (AD) is the most common form of dementia and is the sixth leading cause of death in the United States. The greatest known risk

factor for AD is increasing age; the majority of people with AD are age 65 and older. AD is a progressive disease, with dementia symptoms gradually worsening over several years. Current AD treatments cannot stop disease progression, but they can temporarily slow the progression of dementia symptoms and improve quality of life for those with AD and their caregivers. There is no diagnostic biomarker that can be used to predict the onset of AD, nor is there a biomarker which can distinguish early AD from age-related dementia. Such a discriminatory tool would be invaluable in guiding clinicians towards early interventional efforts. The existence of extracellular RNAs in biofluids represents a fertile molecular landscape from which diagnostic and prognostic biomarkers may be isolated, characterized, and exploited. Accordingly, the identification of extracellular RNAs in the cerebrospinal fluid (CSF) provides an opportunity to define important biomarkers for clinical use in characterizing dementias such as AD. MicroRNAs are members of the non-protein-coding family of RNAs that serve as regulators of post-transcriptional gene expression. MicroRNAs are increasingly being identified in circulating fluids such as CSF, plasma, serum, and placental tissue, where their expression is correlated with several diseases including brain injury, degenerative diseases, and mental health disorders. We propose to identify microRNAs in CSF to examine their utility as diagnostic biomarkers for AD. To achieve this goal, we have established a highly qualified, multidisciplinary investigative team with expertise AD, dementia, and CSF biomarkers, advanced genomic methodologies, biostatistics, and clinical studies to examine the clinical utility of microRNAs in CSF as diagnostic biomarkers for AD.

Lay Summary

PUBLIC HEALTH RELEVANCE: Alzheimer's disease (AD) is a progressive brain disorder that damages and eventually destroys brain cells, leading to memory loss and cognitive decline. Current diagnosis of AD relies largely on documenting mental decline, which itself is not apparent until severe, irreversible brain damage has occurred. Recent studies have shown that extracellular RNAs in biofluids are correlated with disease states, suggesting a potentially important role for these products as diagnostic biomarkers for human disease. Thus, the proposed studies will examine a specific class of extracellular RNAs – microRNAs in cerebrospinal fluid – for their clinical utility as diagnostic biomarkers for AD, a matter of substantial medical importance to patients, their families, and society at large.

Further information available at:

Types:
Investments > €500k

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United States of America

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Alzheimer's disease & other dementias

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2016

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