Haplotype genetic variation of tau protein is a biomarker for chronic traumatic encephalopathy

Technology #cu13076

Neurofibrillary tangles are a hallmark of neurodegenerative diseases including Alzheimer’s disease, and those that result specifically from a defect in the protein tau (encoded by the gene MAPT) are called tauopathies. The MAPT gene has two haplotypes, H1 and H2, and the H1 haplotype is a known risk factor for certain tauopathies. This technology correlates the H1 haplotype of the MAPT gene as a risk factor for repetitive head trauma, or chronic traumatic encephalopathy (CTE). The technology functions as a biomarker to assess patient risk of developing CTE and could be a potential therapeutic target for treating CTE.

Utilizing the MAPT H1 haplotype as a biomarker to assess risk for CTE and address cellular causes of CTE.

Currently not much is known about the origins, development, diagnosis, and effective treatments for CTE. Therapies for CTE focus on managing symptoms. Until recently, there were no in vivo methods of diagnosing CTE – definitive diagnosis is only made postmortem – and these new methods are still in development and rely mostly on expensive imaging techniques, such as PET and fMRI. The association between the MAPT haplotype and CTE as presented in this technology may provide the means to develop diagnostics for both diagnosing the disease and assessing a patient’s risk profile for acquiring the disease. This link could also provide insight into the biomolecular origins and basis for the disease and provide a therapeutic approach that could treat CTE and not just its symptoms.

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Applications:

• Biomarker for CTE for use in diagnostic tests.
• Potential therapeutic target for treating neurofibrillary tangles in CTE.
Advantages:

- Biomarker for CTE that does not require expensive imaging equipment
- MAPT H1 link with neurofibrillary tangles may provide new insight into possible causes of CTE

Patent information:

Patent Pending

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Related Publications:


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