Licensing Opportunity

University &
University Hospital Lausanne

The PACTT is proposing an exclusive or non-exclusive license on an early diagnostic test for narcolepsy and other autoimmune disorders.

Field:

- Diagnostic for narcolepsy and autoimmune disorders.

Development Phase:

- Proof of concept was demonstrated.
- Commercial kit to be developed.

Patent Status:

- Priority date: 25.06.2010
- Patent application filed in the name of the UNIL and naming as inventors M. Tafti and M. Muhlethaler.

Innovative Aspect:

- Early diagnostic of narcolepsy by non invasive method.

Additional Information is Available upon Request (N Ref. IDF 08/10)

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Early diagnostic tool for narcolepsy and other autoimmune disorders

Background

Narcolepsy is a chronic sleep disorder characterized by excessive daytime sleepiness and is often associated with cataplexy (sudden and transient episodes of loss of muscle tone, often triggered by emotions).
Narcolepsy is caused by hypocretin deficiency and the loss of the hypothalamic neurons producing hypocretin. Whereas there is no definitive proof for narcolepsy to be an autoimmune disorder, this is a fact commonly admitted.
To date, diagnosis of narcolepsy is difficult due to a lack of direct markers of the disease. The only available tools are either time consuming such as the multiple latency test or invasive i.e. the measure of hypocretin levels in the cerebrospinal fluid (CSF). Moreover, despite a prevalence of 0.05 to 0.2%, narcolepsy remains largely under diagnosed with only 15-30% of patients being diagnosed.

Description of the Invention

Thanks to a transgenic mouse model they developed, the inventors have been able to identify mRNAs specifically expressed in hypocretin neurons. The inventors showed that Tribbles homolog 2 (Trib2) was enriched in hypocretin neurons. They then developed immunoassays (ELISA and immuno-PCR) to screen for the presence of autoantibodies against Trib2 in sera and CSF from narcoleptic patients. This ELISA assay turned out to reliably detect high titers of anti-Trib2 antibodies only in narcoleptic patients. The inventors also showed that the antibody titers are higher in the early phase of the disease.

Proof of Concept

The inventors have observed that serum of narcoleptic patients had an increased titer of anti-Trib2 compared to controls. Moreover, the inventors showed that this difference of titer is more pronounced at the early stage of the disease. Finally, they showed that serum anti-Trib2 antibodies recognize hypocretin neurons on hypothalamic sections.

Applications and Competitive Advantage

- Easy, cheap and non invasive diagnosis method for narcolepsy.
- May be adapted for the diagnosis of Parkinson and Alzheimer disease as well as for neurodegenerative and central nervous system autoimmune disorders where hypocretin system is affected.