A robust biomarker for the diagnosis and treatment of Parkinson's disease

Technology #cu14042

Parkinson’s Disease (PD) is a devastating neurodegenerative disorder that is caused by the buildup of alpha-synuclein protein within neurons of specialized brain regions and leads to neuronal death in a manner that is not fully understood. Current diagnostic standards are largely observational and a widely accepted diagnostic test has remained elusive. This technology is a method for detecting a T cell-mediated immune response against alpha-synuclein that is specific to PD patients. While healthy individuals produce alpha-synuclein, they rarely exhibit an immunogenic reaction from T cells. In PD patients, T cell activation by alpha-synuclein leads to death of the neuron, implicating this immune response as a key step in disease progression. The technology represents a powerful biomarker for the presence and classification of PD.

Low cost, minimally invasive blood test with broad potential for future development

This technology is a simple, inexpensive method to diagnose PD or confirm a diagnosis, and has the potential to be further developed to monitor disease progression and the efficacy of novel therapies.

The technology was developed using in vitro culture and in vivo rodent studies, validated using patient blood samples, and further confirmed with human autopsy results.

Lead Inventor:

David Sulzer, Ph.D.

Applications:

- Accurate diagnosis of PD from blood samples
- Confirmation of a PD diagnosis that has been made on symptomatic criteria
- Potential biomarker to monitor disease progression and provide an objective means for evaluating novel therapeutics and identifying patients in pre-clinical stages
• Potential tool to identify patient-specific disease variation that would guide physicians to a more personalized medicine approach if further developed

**Advantages:**

• Potential to be the first diagnostic test for Parkinson’s disease
• Could enable early intervention, as it would not require doctors and patients to wait for symptoms to advance in order to confirm a diagnosis
• Simple and low-cost
• Could prove to be an effective treatment for large populations of PD patients if the immune response is broadly targeted
• Could lead to personalized treatment regimens and is expected to result in fewer side effects
• Immune therapies currently in development for other autoimmune disorders such as type I diabetes and multiple sclerosis could be easily translated to target these PD T cell responses.

**Patent Information:**

Patent Pending ([WO/2015/157117](http://www.wipo.int/patents/search/#query=WO2015157117))

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**Related Publications:**


**Inventors**

David Sulzer Ph.D.