Docket #: S23-516

Novel Treatment for Parkinson's Disease and Other Immune-Mediated Diseases

Stanford researchers in the Montine Lab have created novel indolinone LRRK2 kinase inhibitors, a class of compounds for treating disorders associated with LRRK2, including Parkinson's disease, cancer, leprosy, Alzheimer's disease, other neurodegenerative diseases, and immune-mediated disorders.

Current treatments for Parkinson's Disease (PD) and certain neurodegenerative diseases primarily target symptom relief without addressing the underlying cause, leaving a significant unmet need for disease-modifying therapies. The leucine-rich repeat kinase 2 (LRRK2) has been associated with several diseases, including PD, certain cancers, leprosy, Crohn's disease, Alzheimer's disease, and immune-mediated disorders. However, there are limited therapeutic options available for treating disorders linked to aberrant LRRK2 kinase activity. Additionally, LRRK2 has been found to play a role in pathologic changes in the brain and immune cell response, suggesting it could be a viable target for a range of disorders.

Stanford researchers have created novel indolinone LRRK2 kinase inhibitors, aimed at treating disorders associated with LRRK2. By targeting LRRK2, known to contribute to several such disorders, these inhibitors could offer the first potential disease-modifying therapy. Central to making this technology superior is the fact that LRRK2 is involved in various neuropathologies including Parkinson's, Alzheimer's, certain cancers, and immune-mediated diseases, providing a wide scope for its application.

Stage of Development
Proof of concept – in vitro kinase activity assay data

Related Docket
S24-467 - "Pyridone LRRK2 Inhibitors" - Second chemotype of LRRK2 inhibitors with

same applications.

Applications

- Treatment of Parkinson's disease
- Potential treatment for immune-mediated diseases

Advantages

- Novel disease-modifying treatment targeting LRRK2 inhibitor
- Broad range of potential applications for neurodegenerative diseases, cancer, leprosy, and other immune-mediated diseases
- Mitigate certain types of inflammation by regulating immune cell response

Patents

- Published Application: WO2025155711

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