KDDF
Korea Drug Development Fund

Asset #46
University of Toronto

Peptide Therapeutics for Parkinson's Disease

Therapeutic Area	Neurology	**Indications**	Parkinson's Disease
Modality	Peptide	**Development Stage**	Hit to Lead/Lead Optimization

Overview

Background

- Parkinson's disease is a disabling and progressive neurological disorder characterized by degeneration of dopamine-producing neurons. Current therapies to replace dopamine are only symptomatic and are associated with considerable complications as the disease progresses.
- No disease-modifying therapies that slow or stop disease progression are available or likely to emerge soon. With Parkinson's disease affecting over 6 million people worldwide and being the fastest growing neurological disease, this is a huge unmet need in neurodegeneration.

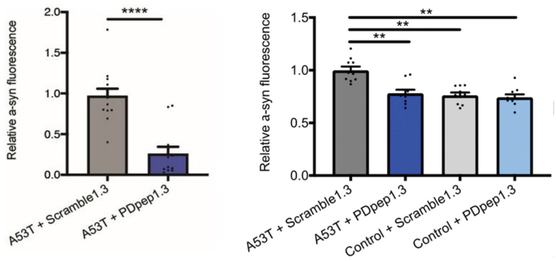
Technology Advantages

- Novel screening platform enabled discovery of protein-protein interaction hits
- Lead compound with nanomolar target engagement
- Fully novel target in an under-explored molecular pathway
- Proven in vivo efficacy

Key Data

PDpep1.3 reduces a-syn levels in model cell lines

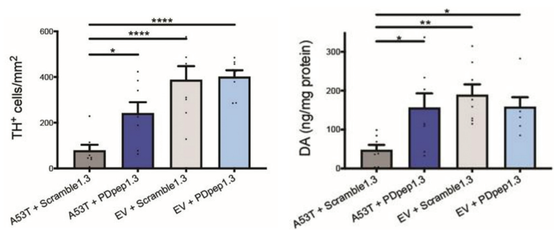
A



PDpep1.3 reduces alpha-synuclein protein levels in rat cortical neurons expressing the disease-causing A53T alpha-synuclein mutant (left panel) and normalizes A53T alpha-synuclein levels to those of isogenic controls in dopamine neurons derived from human iPSCs (right panel). A scrambled version of the peptide (Scramble1.3) was used as a control peptide.

PDpep1.3 reduces a-syn-mediated neurodegeneration in C. elegans and an a-syn oligomer rat model

B



In a commonly used rat preclinical model of Parkinson's disease, viral mediated expression of A53T alpha-synuclein causes degeneration of TH+ dopamine neurons in the substantia nigra compared to empty viral vector (EV). PDpep1.3 reduces degeneration of dopamine neurons in this model (left panel) and rescues dopamine levels in the striatum, which receives projections from the affected substantia nigra (right panel).

IP Status & Publication(s)

Intellectual Property

Patent Number
PCT-CA2022-051837 (2022.12.15)

Patent Family
PCT

Publication(s)

- Nim et al. (2023). Disrupting the α-synuclein-ESCRT interaction with a peptide inhibitor mitigates neurodegeneration in preclinical models of Parkinson's disease. Nature Communications.