



Impel NeuroPharma Announces Initiation of Phase IIa Study of INP103 in Parkinson's Disease OFF Episodes

Study to Explore the Therapeutic Benefit of Intranasal Levodopa in Parkinson's Disease OFF Reversal (THOR 201)

SEATTLE, May 31, 2018 -- Impel NeuroPharma, a Seattle-based, privately-held biotechnology company focused on therapies for the treatment of central nervous system (CNS) disorders, today announced the initiation of a Phase IIa study designed to explore the safety and pharmacodynamic effect of intranasal levodopa in Parkinson's disease (PD) patients during an OFF episode compared to placebo. INP103 is a novel intranasal levodopa product dosed via Impel's proprietary Precision Olfactory Delivery, or POD[®], platform.

"We are pleased to initiate our Phase IIa study of INP103 in levodopa responsive PD patients which will explore the therapeutic potential for intranasal levodopa in the reversal of OFF episodes," said Jon Congleton, Chief Executive Officer of Impel. "Our goal is to bring innovative solutions that address unmet needs in people managing CNS disorders and this study is another example of that commitment."

"We believe that Impel's POD device will consistently and predictably deliver intranasal levodopa to Parkinson's patients, to reverse their OFF time and gain a meaningful improvement in their activities of daily living. We look forward to reporting topline results from this study in the second half of 2018," said Dr. Stephen Shrewsbury, Chief Medical Officer of Impel.

Parkinson's disease, which affects over one million people in the United States, is a progressive neurodegenerative disease that results from the loss of dopamine producing neurons and leads to tremor, rigidity and uncontrollable movements. The majority of patients will end up on levodopa which has been the main therapeutic intervention to address these symptoms since the late 1960s. However as Parkinson's disease progresses, more than 50% of patients periodically develop a frozen state, or OFF episode, despite chronic oral levodopa treatment due to fluctuating drug levels.

About THOR 201

THOR 201, is a randomized, double-blind, placebo controlled, single ascending dose (SAD) Phase IIa study to compare the safety, tolerability and pharmacokinetics/

pharmacodynamics of intranasal levodopa following administration of INP103 in the presence of benserazide in PD patients during an OFF episode.

The study will enroll 24 patients who will be randomized into one of three ascending dose treatment arms (35 mg, 70 mg and 140 mg vs. placebo) containing eight subjects per cohort.

The primary endpoint of the study is safety and tolerability over the immediate 240 minutes following dosing and over seven days of follow-up. Secondary endpoints include evaluating the pharmacokinetic profile of levodopa and pharmacodynamic effect of INP103 in the 120 minutes following dosing. The latter will be measured by trained assessors using the Movement Disorder Society - Unified Parkinson's Disease Rating Scale (MDS-UPDRS).

Further details about THOR 201 can be found on the following clinical trial websites: ANZCTR (www.anzctr.org.au) reference: ACTRN12618000427279 and ClinicalTrials.gov (www.clinicaltrials.gov) reference: NCT03541356

About INP103

INP103, being studied for reversal of OFF episodes in Parkinson's disease, is a drug-device combination product comprised of a novel intranasal formulation of levodopa with Impel's novel Precision Olfactory Delivery, or POD, device. The POD is a novel, simple-to-use device designed to deliver consistent and predictable doses of drug. INP103 delivers levodopa to the richly vascularized upper nasal cavity, offering rapid and optimized bioavailability that can be administered by the patient or a caregiver. Levodopa is the gold standard treatment in Parkinson's disease, however as the disease progresses patients taking levodopa experience increasing daily OFF episodes, impacting their lives.

About Impel NeuroPharma

Impel NeuroPharma, Inc., is a privately-held, Seattle-based biotechnology company devoted to creating life-changing, innovative therapies for central nervous system (CNS) diseases. Impel NeuroPharma is currently investigating INP104 (POD-DHE) for acute migraine headache, INP103 (POD-levodopa) for reversal of OFF episodes in Parkinson's disease, INP105 (POD-olanzapine) for acute agitation in schizophrenia and bipolar disorders as well as INP102 (POD-insulin) for Alzheimer's disease in a series of trials currently funded by the NIH.

Impel's products utilize its novel, nasal drug delivery POD device technology to deliver liquid or dry powder forms of drug to the upper nasal cavity in a consistent and predictable manner.

To learn more about Impel NeuroPharma, please visit our website at <http://impelnp.com>.

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