NeuroScientific
BIOPHARMACEUTICALS
ASX:NSB

ASX ANNOUNCEMENT
15 June 2022

EMTINB™ DEMONSTRATES STRONG POSITIVE RESULTS ACROSS ALL END-POINTS IN MULTIPLE SCLEROSIS ANIMAL STUDY

HIGHLIGHTS

- **Prelinimary results for EmtinB™ in a gold standard animal model for Multiple sclerosis demonstrate a strong therapeutic treatment response**
- **EmtinB™ 10mg/kg and 20mg/kg dose groups consistently improved clinical scores from the onset of symptoms and throughout the peak of the disease**
- **EmtinB™ 10mg/kg and 20mg/kg dose groups exhibited increased levels of myelin, the protective sheath that is fundamental to the function and survival of neurons**
- **EmtinB™ reduced a key driver of the chronic inflammatory responses of MS, activated CD3+ T cells**
- **EmtinB™ treatment reduced inflammatory responses of dysfunction support cells (macrophages, microglia, and astrocytes) in the central nervous system.**

NeuroScientific Biopharmaceuticals Ltd (ASX: **NSB**) (**"NeuroScientific"** or **"the company"**), a clinical-stage drug development company, is pleased to announce positive preliminary results of lead drug candidate EmtinB™ in a gold standard animal model of Multiple sclerosis (MS). The study was undertaken by leading contract research partner Biospective, Canada.

The study was conducted in the myelin oligodendrocyte glycoprotein-induced experimental autoimmune encephalomyelitis (MOG-EAE) mouse model, the gold-standard animal model for replicating the inflammatory mechanisms of human MS. The study evaluated EmtinB™ across 4 dose groups (5mg/kg, 10mg/kg, 20mg/kg, and 40mg/kg) with the drug administered daily for a period of 30-days following the onset of initial symptoms in the mice.

EMTINB™ TREATMENT IMPROVED CLINICAL SCORES

Clinical scoring involves a standard system to assess the severity of MS symptoms. Mice treated with 10mg/kg and 20mg/kg doses of EmtinB™ consistently achieved lower clinical scores, indicating reduced disease severity, from the onset of symptoms and through to the peak of the disease in comparison to untreated controls.

EMTINB™ TREATMENT REDUCED BIOMARKER INDICATIVE OF NEURONAL DAMAGE

Neurofilament light chain (NfL) is a biomarker associated with damaged neurons. EmtinB™ treated mice had lower concentrations of NfL in cerebral spinal fluid (CSF) and plasma samples in comparison to untreated controls.

EMTINB™ TREAMENT INCREASED MYELIN

Myelin is important for the efficient function of nerve cells. The destruction of myelin contributes to the onset of neurological dysfunction associated with MS.

Mice treated with 10mg/kg and 20mg/kg consistently exhibited higher levels of myelin in comparison to untreated controls.

EMTINB™ TREATMENT REDUCED CHRONIC INFLAMMATORY IMMUNE RESPONSES

The study assessed a number of markers associated with chronic inflammatory responses of MS. Fundamental to the dysfunctional immune responses of MS in humans, activated T cells (CD3+) penetrate the blood brain barrier and stimulate inflammatory responses of the CNS, activating resident immune defence cells such as microglia and macrophages (Iba-1), and astrocytes (GFAP).[1]

Mice treated with EmtinB™ exhibited lower levels of activated T cells (CD3+), activated microglia and macrophages (Iba-1), and activated astrocytes (GFAP) across all dose groups in comparison to untreated controls.

NeuroScientific's Managing Director and Chief Executive Officer Matt Liddelow commented: *"The preliminary results from this study conducted in the gold standard animal model for MS are highly encouraging for the development of EmtinB™ as a treatment for MS, in particular the relapse-remitting type of MS in which inflammation is a key driver of symptoms. In comparison to currently marketed MS therapeutics, EmtinB™ has the potential to be a disease-modifying treatment option for MS patients with a much more tolerable side-effect profile."*

Based on these positive preliminary results, NeuroScientific will progress EmtinB™ into a larger study involving the MOG-EAE mouse model of MS and expects to report a full set of results midway through 2H 2022.

This announcement is authorised by the Board of NeuroScientific Biopharmaceuticals Ltd.

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For more information please contact:

Matthew Liddelow
CEO and Managing Director
ml@neuroscientific.com
+ 61 8 6382 1805

Lucas Robinson
Investor Relations
Corporate Storytime
lucas@corporatestorytime.com
+ 61 408 228 889

About NeuroScientific Biopharmaceuticals Ltd

NeuroScientific Biopharmaceuticals Limited (ASX: NSB) is a company developing peptide-based pharmaceutical drugs that target a number of neurodegenerative conditions with high unmet medical demand. The company's product portfolio includes EmtinB™, a therapeutic peptide initially targeting Alzheimer's disease and glaucoma, as well as other Emtin peptides (EmtinAc, EmtinAn, and EmtinBn) which have demonstrated similar therapeutic potential as EmtinB™. For more information, please visit www.neuroscientific.com

About EmtinB™

EmtinB™ is a peptide-based compound that binds to surface-based cell receptors from the LDLR family, activating intracellular signalling pathways that stimulate neuroprotection, neuroregeneration and modulate neuroinflammation. EmtinB™ is modelled on a specific active domain of the complex human protein called Metallothionein-IIA, which is produced as part of the human body's innate immune response to cell injury.

Our preclinical research has established that EmtinB™ is highly specific and selective for its target receptor, safe and well tolerated at high concentrations, and is able to penetrate the blood brain barrier. A series of Phase I clinical studies will be conducted to establish the safety profile of EmtinB™ in humans.

[1] Balasa, R. et al. 2020 Then action of TH17.1 cells on blood brain barrier in multiple sclerosis and experimental autoimmune encephalomyelitis. 81(5): 237-43.