



NeuroScientific
BIOPHARMACEUTICALS

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Breakthrough Results from Spinal Cord Injury Model

- EmtinB demonstrated the largest ever improvement in neurite growth and increased number of active connections between nerve cells. Treatment with EmtinB produced longest axon ever sampled by this disease model. An increase in the length of axon is a measure of nerve's cell ability to regenerate
- EmtinB stimulated nerve regeneration exceeding 300% compared to control and double that of Copaxon®, the leading marketed drug for Multiple Sclerosis with peak annual sales of \$4 billion dollars
- Results clearly demonstrate significant promise of Emtins' neuroprotective effects in multiple neurodegenerative diseases, such as Alzheimer's, Multiple Sclerosis, Parkinson's, etc.
- First human studies to be initiated this quarter.



Perth, Australia; 2 July 2019: Drug development company NeuroScientific Biopharmaceuticals Ltd (ASX:NSB, "NSB" or the "Company") is pleased to report the results of a breakthrough study that paves the way for a new effective way to treat Alzheimer's, our lead indication. The study also points towards ability of EmtinB to be a powerful avenue to help patients by developing drugs for several other neurodegenerative diseases including Multiple Sclerosis, Parkinson's, Amyotrophic Lateral Sclerosis, Spinal Injury and other neurodegenerative diseases.

This data marks the first time a dendrimer type molecule targeting this crucial cellular survival pathway has been effective in the neurodegenerative model. "These results far exceeded our expectations for efficacy in every test in the model. We could finally have a disease modifying therapy for Alzheimer's," said Matthew Liddelow, CEO and Managing Director of NeuroScientific Biopharmaceuticals.

"Our company goal is to create new products that reach their target in the brain and act as a protector against nerve cells injury. Currently, there are no approved drugs that can slow down or halt neurodegeneration. We believe that EmtinB has potential to bridge this gap and bring this breakthrough medicine to clinics and with our strong cash position, look forward to commencing our human studies," commented Brian Leedman, Chairman of NeuroScientific Biopharmaceuticals.

The study was performed by MD Biosciences, a global industry-leading provider of preclinical, translational and clinical-phase contract research services specializing in the neuroscience space. The neurite outgrowth assay is a highly validated model for assessment of potential therapeutic compounds in neurodegenerative disease areas.

The spinal nerve injury model used in the study was a specifically designed assay involving primary nerve cells isolated from adult rat spinal cord tissue. The model focuses on measuring neurite outgrowth, a neural processes from developing neuronal cell bodies that occurs via cytoskeletal reorganization (an early cellular response to a variety of extracellular signals), and is an important step during normal neuronal development. Through this process, neurons organize themselves into highly complex functional networks connected synaptically to one another (neuron passing an electrical or chemical signal to another neuron). Modulation of this neurite outgrowth process has been implicated in a wide range of central nervous system (CNS) diseases, including neurodegenerative disorders such as Alzheimer's, Multiple Sclerosis, Parkinson's as well as spinal cord injuries.

The highest dose of EmtinB significantly stimulated regeneration of nerve cells by more than 300% in comparison to controls incubated with sterile water (**Figure 1** below) and in one sample achieved the distinction of forming the longest axon ever measured in this model. Furthermore, EmtinB treatment of injured nerve cells was more effective than FDA approved and marketed drug Copaxon® across all concentrations, with higher dose of EmtinB producing 200% improvement.

Group	Thickness (mm)
Vehicle	~100
NSB 10µg/ml	~200
NSB 20µg/ml	~210
NSB 30µg/ml	~370
Copaxone 10µg/ml	~170

[illegible]

The Company will continue to update shareholders on its multiple ongoing pre-clinical efficacy, safety and toxicology studies, of which results are expected throughout this quarter. All data generated to date bodes very well for further clinical development with first human studies to be initiated this quarter.

Ends

About NeuroScientific Biopharmaceuticals Ltd

NSB (ASX:NSB) is a drug development company focused on developing peptide-based pharmaceutical drugs for the treatment of neurodegenerative conditions with high unmet medical need. The Company's product portfolio includes EmtinB, a novel therapeutic peptide most advanced as a treatment for Alzheimer's disease; and other related peptides (EmtinAc, EmtinAn, and EmtinBn) which have demonstrated similar therapeutic potential as EmtinB. For more information, please visit www.neuroscientific.com

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