



NeuroScientific

BIOPHARMACEUTICALS

ASX:NSB

ASX ANNOUNCEMENT

23 JUNE 2021

NEUROSCIENTIFIC PRESENTING AT GOLD COAST INVESTMENT SHOWCASE

NeuroScientific Biopharmaceuticals Ltd (ASX: **NSB**) (“**NeuroScientific**” or “**the company**”) is pleased to announce that Director of Operations Dr Alexandra Heaton will present at the Gold Coast Investment Showcase to be held on the 23 and 24 June 2021.

Organised by Vertical Events, the Gold Coast Investment Showcase involves a diverse range of presentations from both pre-listed and listed companies from all sectors.

NeuroScientific’s most current company presentation will follow this announcement.

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

-ENDS-

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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™

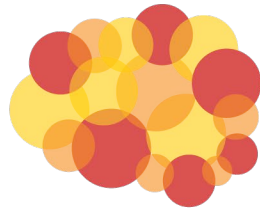
EmtinB™ is a peptide-based compound that binds to surface-based cell receptors from the LDLR family, activating intracellular signalling pathways that stimulate neuroprotection, neuroregeneration and modulate neuroinflammation. EmtinB™ is modelled on a specific active domain of the complex human protein 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.

An illustration on a dark blue background shows a white silhouette of a person rappelling down a vertical rope on the left. A beam of light from a flashlight held by the person illuminates a large, detailed yellow neuron with a star-shaped cell body and branching dendrites. Other faint, grey neurons are scattered in the background.

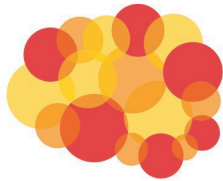
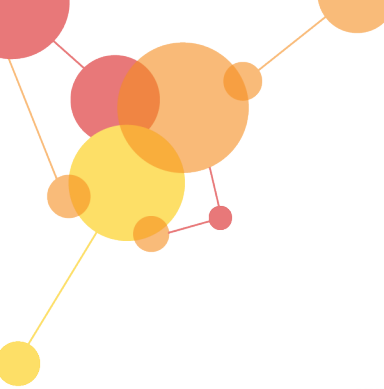
**NOVEL DRUG
THERAPIES FOR
NEURODEGENERATIVE
CONDITIONS**

**Corporate Update
June 2021**



NeuroScientific

BIOPHARMACEUTICALS



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DISCLAIMER

The purpose of the presentation is to provide an update of the business of NeuroScientific Biopharmaceuticals Ltd (“NeuroScientific”, or “the Company”). These slides have been prepared as a presentation aid only and the information they contain may require further explanation and/or clarification. Further information is available upon request.

The views expressed in this presentation contain information derived from publicly available sources that have not been independently verified. No representation or warranty is made as to the accuracy, completeness or reliability of the information. Any forward looking statements in this presentation have been prepared on the basis of a number of assumptions which may prove incorrect and the current intentions, plans, expectations and beliefs about future events are subject to risks, uncertainties and other factors, many of which are outside NeuroScientific’s control. Important factors that could cause actual results to differ materially from assumptions or expectations expressed or implied in this presentation include known and unknown risks. Because actual results could differ materially to assumptions made and NeuroScientific’s current intentions, plans, expectations and beliefs about the future, you are urged to view all forward looking statements contained in this presentation with caution.

This presentation should not be relied on as a recommendation or forecast by NeuroScientific. Nothing in this presentation should be construed as either an offer to sell or a solicitation of an offer to buy or sell shares in any jurisdiction.

SUMMARY OVERVIEW

NEUROSCIENTIFIC BIOPHARMACEUTICALS LTD (ASX: NSB)

- Drug development company with an advanced preclinical lead candidate called EmtinB™; funded through to completion of Phase I ocular and neurology clinical studies
- EmtinB™ targets LRP-1 receptors expressed on the outside of neurons and supporting cells of the central nervous system; MOA has potential for multiple treatment indications (pipeline in a product) which increases potential for licensing opportunities
- EmtinB™ preclinical data has demonstrated:
 - Neuroprotection in cell survival models >90%
 - Significant axonal regeneration (including significant results in spinal injury rat model)
 - Proliferation of myelin forming cells (oligodendrocytes) and myelin formation in Multiple sclerosis model
 - Slowed cognitive decline in Alzheimer's disease animal model
 - Slowed glaucoma-induced damage to the optic nerve in animal model
 - Safety studies completed up to 4-weeks in nonhuman primates
- Transitioning EmtinB™ to clinical development in 2021

FINANCIAL METRICS & MILESTONES

FINANCIALS

- ~\$14.5M cash on hand
- ~\$2.0M preclinical R&D costs for FY21
- ~\$4.5M clinical development cost over next 12 months
- Recently appointed Paul Rennie as Non-executive Chairman
- Novel lead drug candidate transitioning to clinical development in 2021

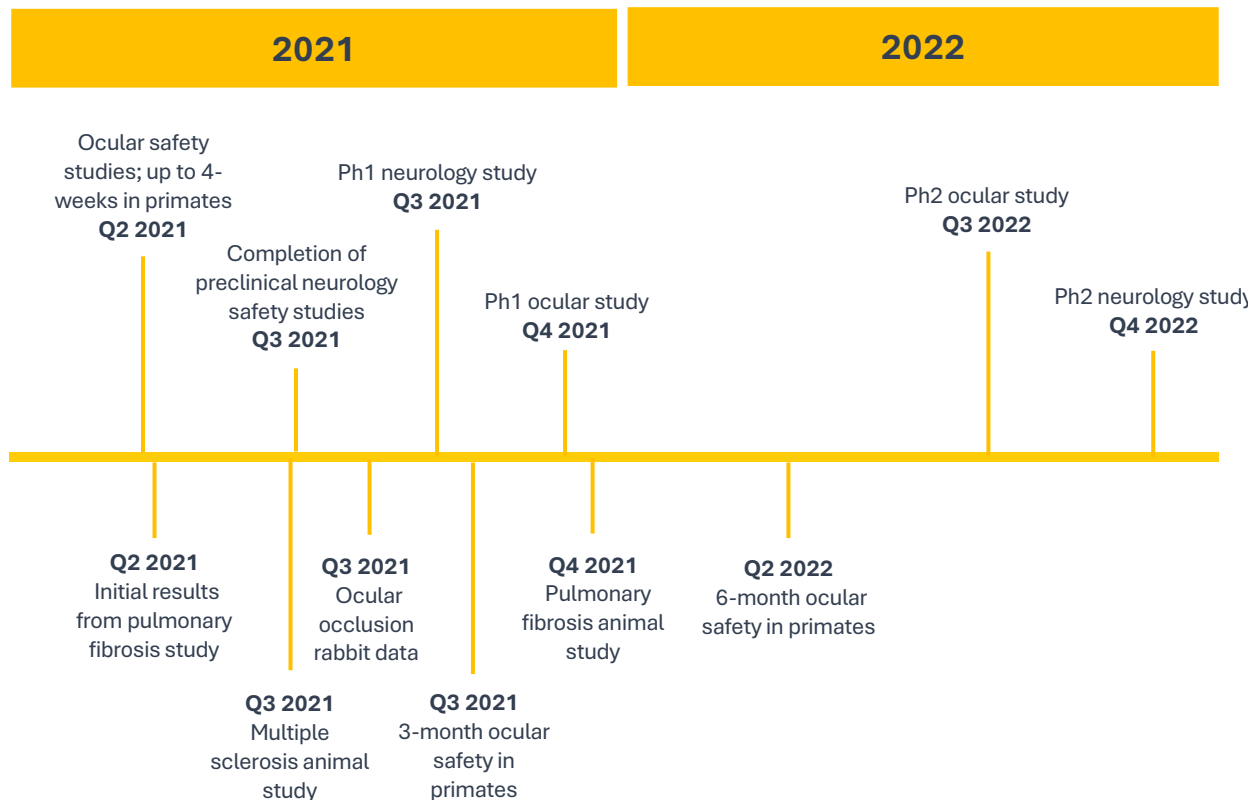
MILESTONES

- Q2 2021 – Results from ocular safety & tox 4-week primate study
- Q3 2021 – Results from preclinical Multiple sclerosis study
- Q3 2021 – Completion of preclinical neurology IND-enabling safety & tox
- Q3 2021 – Phase I “first-in-human” clinical study
- Q4 2021 – Phase I “first-in-patient” ocular study

CAPITAL STRUCTURE

ASX code	NSB
Shares on issue	143M
Price (22/06/2021)	\$0.36
Market cap	\$51M
Unlisted options	8.85M
McRae Investments	18%
BNP Paribas Nominees Pty Ltd	8.0%
SIX SIS Ltd (DRP A/C)	
Executive Management	5.0%
WR Krishnarajah (Former CEO of Linear Medical)	2.0%

EMTINB DEVELOPMENT PLAN



Please note:

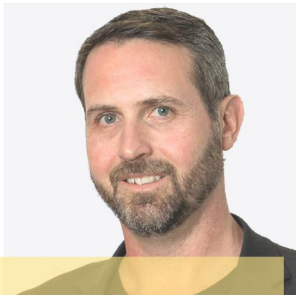
Indicative timeline only and subject to change due to the Company relying on independent contract service providers to perform our research.

LEADERSHIP TEAM

NSB is pleased to announce the appointment of Paul Rennie as Non-executive Chairman

Paul Rennie, MBM, MSTC
NON-EXECUTIVE CHAIRMAN

Founding and current CEO of Paradigm Biopharmaceuticals (ASX:PAR). Former COO and Executive VP New Product Development at Mesoblast Ltd (ASX:MSB).



Matt Liddelow, MPharm
MD + CEO

14+ years experience commercialising medical devices and pharmaceuticals for multi-national companies including AstraZeneca



Anton Uvarov, PhD
EXECUTIVE DIR & CSO

Founding director of Actinogen Medical (ASX:ACW) an advanced Alzheimer's biotechnology company. Former Equities Analyst with Citigroup, US



Stephen Quantrill, MBA
NON-EXECUTIVE DIRECTOR

20 years' experience in corporate advisory and company directorship, Executive Chairman of McRae Investments

OPERATIONAL TEAM
Dougal Thring, MPharmMed
VP Clinical Development

Dr Alexandra Heaton, PhD
Director of Operations

NEUROSCIENTIFIC BIOPHARMACEUTICALS LTD

NeuroScientific Biopharmaceuticals Ltd (ASX: NSB) is developing peptide-based compounds that prevent neurodegeneration and stimulate neuroregeneration

**TARGETED PEPTIDES
WITH BROAD
THERAPEUTIC
APPLICATION**

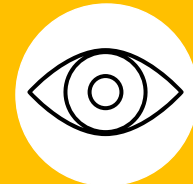
NEUROLOGY

Alzheimer's disease, Multiple sclerosis, spinal cord injury



OPHTHALMOLOGY

Glaucoma, optic nerve atrophy, optic neuropathies



INVESTMENT OPPORTUNITY

NOVEL LEAD COMPOUND

- First in-class therapeutic for neurodegenerative conditions
- Inhibits cell death (apoptosis), induces regeneration, mediates neuroinflammation

NOVEL THERAPEUTIC TARGET

- LRP-1 is a novel therapeutic target for neurodegenerative conditions
- Highly expressed in central and peripheral nervous systems (CNS & PNS)

VALIDATED SCIENCE

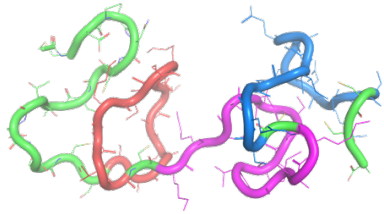
- Large body of published literature for metallothionein-IIA and LRP
- EmtinB has been validated across *in vitro* and *in vivo* disease models

POTENTIAL FOR MULTIPLE INDICATIONS

- LRP-1 receptor highly expressed by damaged cells of CNS and PNS
- Declining cells that express LRP-1 can be rescued by EmtinB - pipeline in a product
- Other Emtin peptides include EmtinAc, EmtinAn, and EmtinBn

EMTINB™: LRP-1 AGONIST THAT PROMOTES NEURONAL SURVIVAL & REGENERATION

METALLOTHIONEIN-IIA

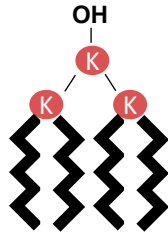


MTIIA is expressed post damage in different tissues as part of the human innate immune response



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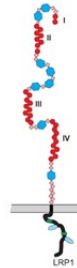
EMTINB™



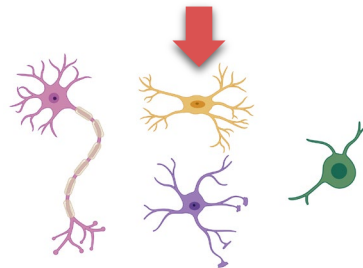
EmtinB is modelled on an active domain of MTIIA and highly specific for binding LRP-1

- Synthetically manufactured
- Low potential for side effects
- No off-target binding
- Compound structure increases potency at receptor

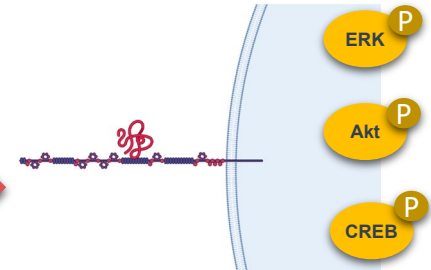
TARGET RECEPTOR



LRP-1 receptor is expressed by neurons, glial cells, OPCs



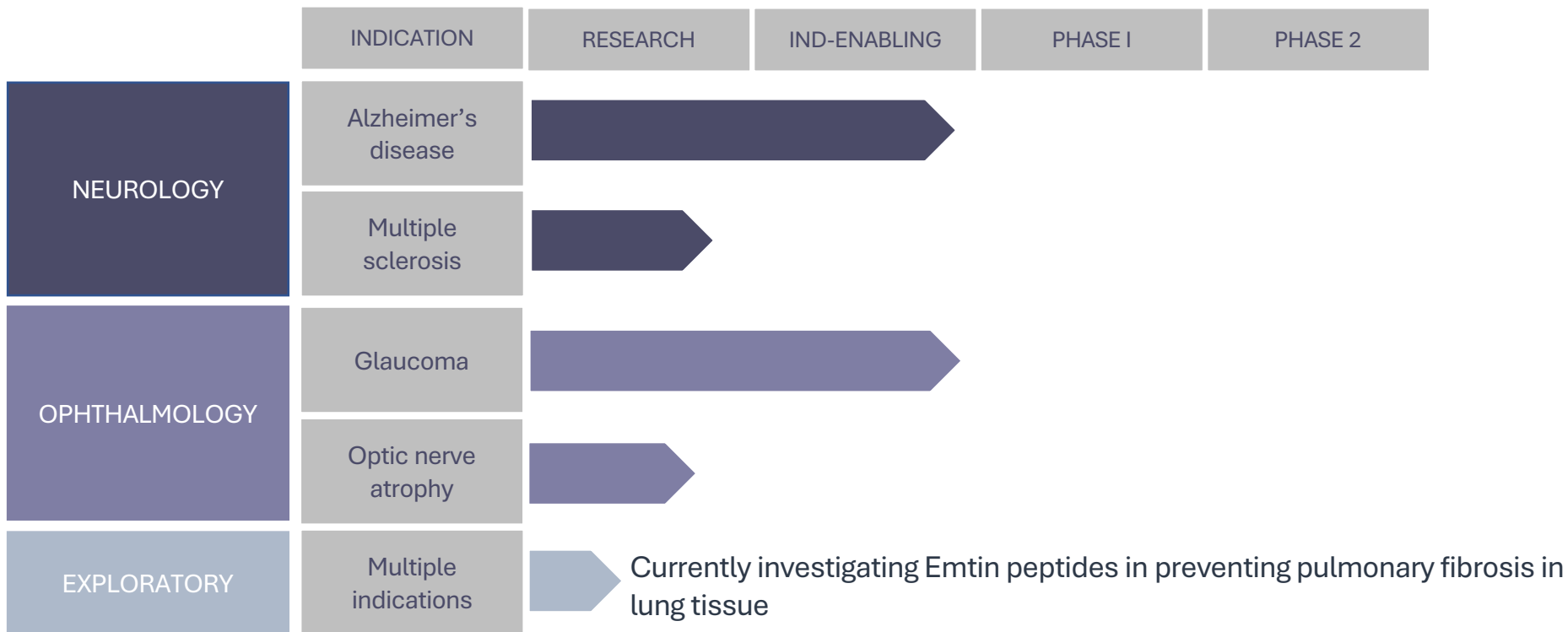
INTRACELLULAR SIGNALLING



Activation of LRP-1 stimulates downstream signalling promoting:

- Neuronal survival
- Axonal regeneration
- Neuronal plasticity
- Modulation of neuroinflammation
- Cell-specific proliferation and differentiation

EMTINB™ – PIPELINE IN A PRODUCT



NEUROLOGY



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NEURODEGENERATIVE CONDITIONS SIGNIFICANTLY CONTRIBUTE TO GLOBAL BURDEN OF DISEASE

DEMENTIA & ALZHEIMER'S DISEASE

50M people globally have dementia

70% dementias Alzheimer's disease

Global prevalence driven by aging
population

US\$818B global economic burden



MULTIPLE SCLEROSIS

2.5M global prevalence

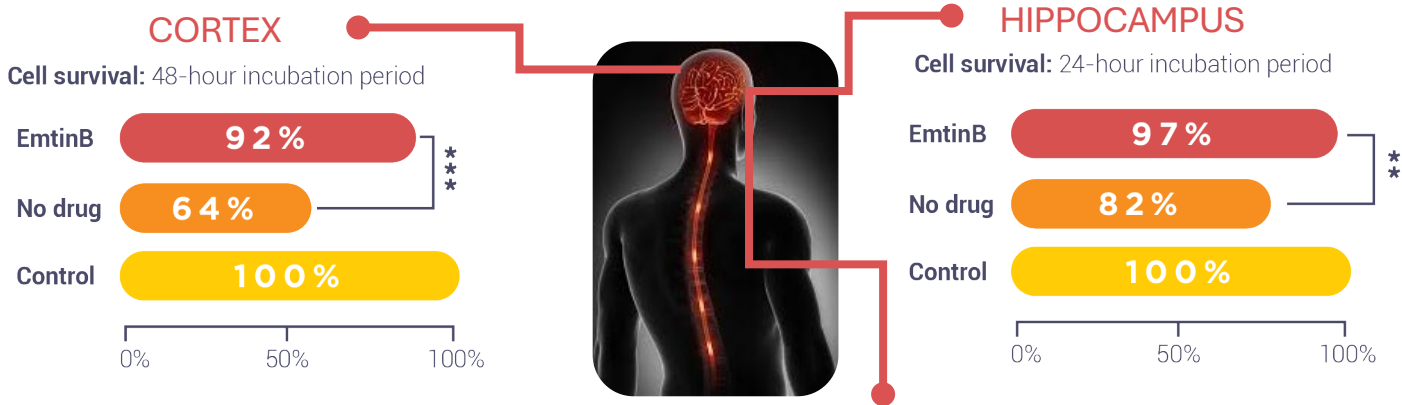
20-50y age range of diagnosis

Progressive onset with increasing
neurological disability

USA has one of highest rates of MS

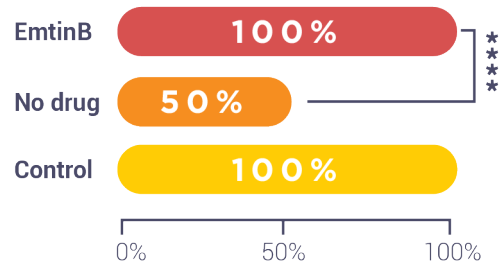
EMTINB™ PROMOTES NEURONAL SURVIVAL

Increases *in vitro* survival of damaged neurons from different regions of CNS



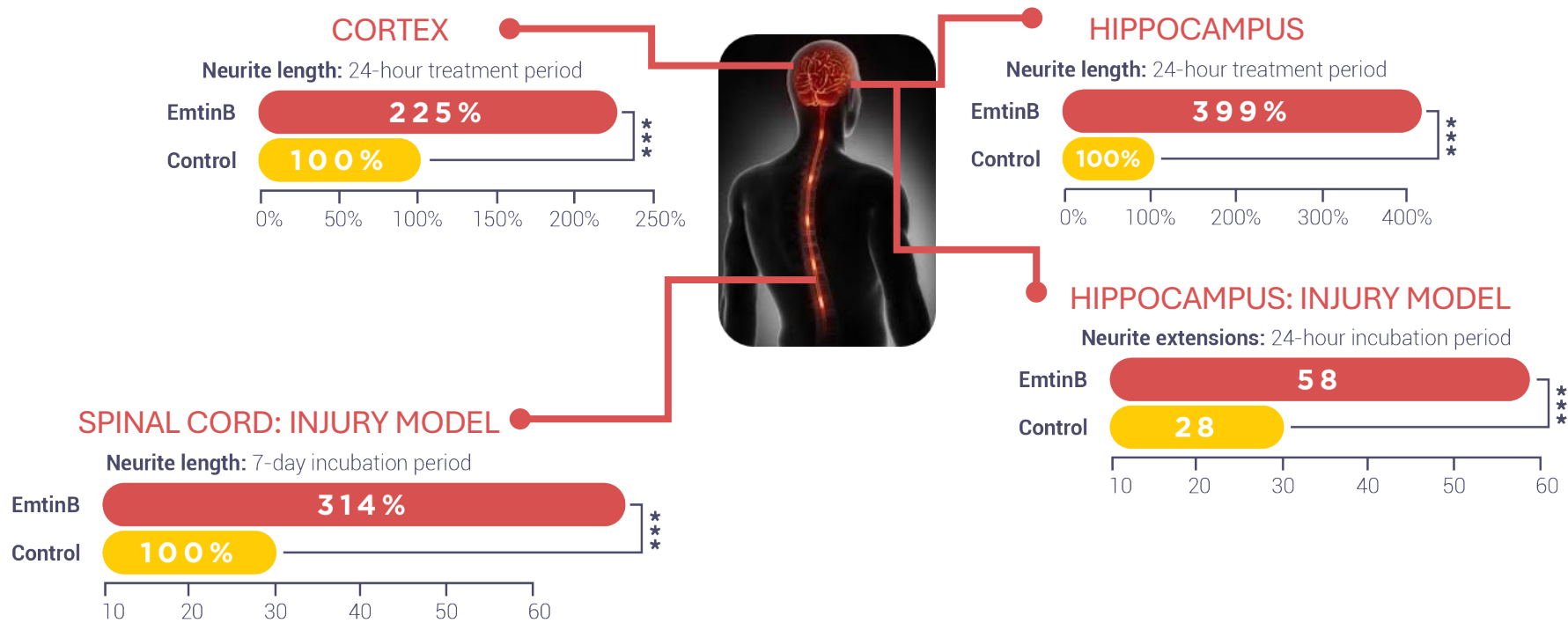
HIPPOCAMPUS: ALZHEIMER'S MODEL

Cell survival: 24-hour incubation period

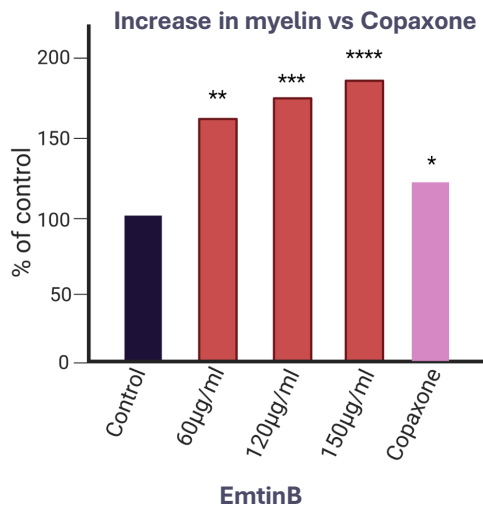
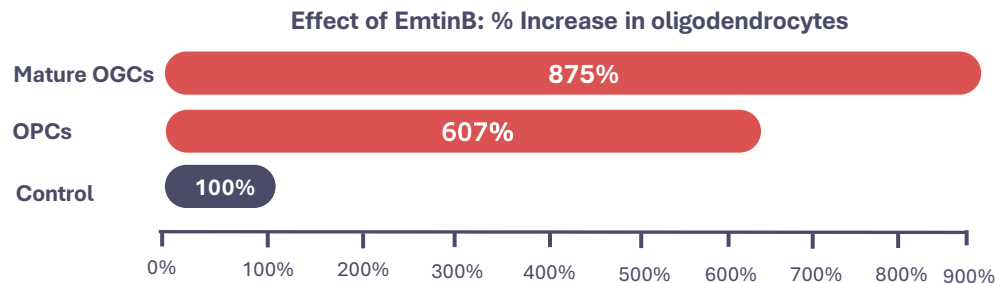


EMTINB™ PROMOTES NEURONAL REGENERATION

Increases *in vitro* axonal regeneration in neurons from different regions of CNS



EMTINB™ PROMOTES REMYELINATION IN MULTIPLE SCLEROSIS MODEL



MULTIPLE SCLEROSIS MODEL

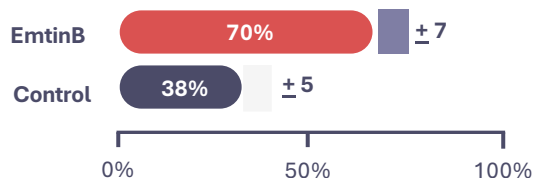
- Mature oligodendrocytes produce the myelin sheath that insulates axons of neurons; in MS, the myelin sheath is damaged and nerve cells can't function effectively
- EmtinB increased the number of oligodendrocyte precursor cells (OPCs) by **~7x** (+607% vs control $p < 0.001$) and mature oligodendrocytes (OGCs) by **~10x** (+875% vs control $p < 0.001$)
- EmtinB increased myelin by **>30%** vs marketed MS drug Copaxone®
- EmtinB significantly increased survival and regeneration of neurons

EMTINB™ SLOWED COGNITIVE DECLINE IN ALZHEIMERS MODEL

Significantly slowed progression of AD in gold standard mouse model (APPswe/PS1)

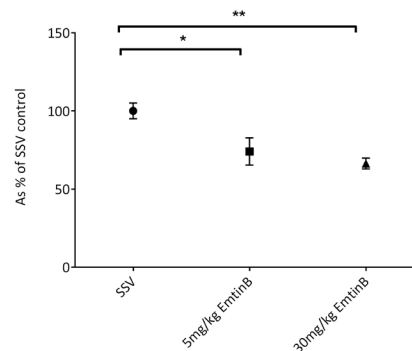
AD MOUSE MODEL

Cognition: treatment for 48 days



- Slowed progression of Alzheimer's disease (memory impairment) by >80%
- Efficacy established at 5mg/kg per day administered via subcutaneous injection

EFFECT ON ASTROGLIOSIS

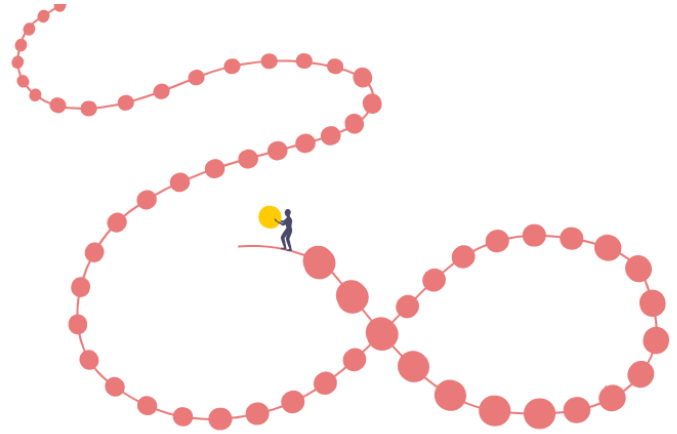


- Significantly down-regulated inflammatory response from over-reactive astrocytes (support cells of the nervous system)

OPHTHALMOLOGY



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>5% OF GLOBAL POPULATION SUFFER VISION LOSS DUE TO DAMAGED OPTIC NERVE

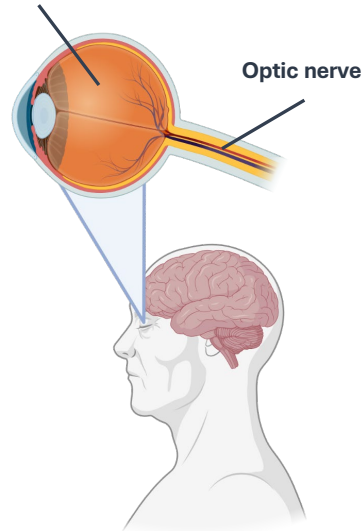
GLAUCOMA

76M global prevalence

2nd leading cause of blindness

Irreversible damage to the optic nerve results in permanent vision loss

Vitreous humour



Optic nerve

OPTIC NEURITIS

10M global prevalence

50% MS patients affected

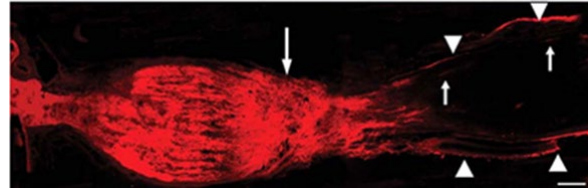
Leads to partial or complete loss of vision

REGENERATING THE OPTIC NERVE

No Treatment



Treatment



RAT TRANSECTION MODEL

EmtinB precursor compound (MT-II):

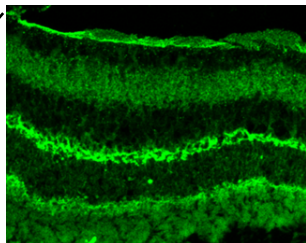
- Stimulated regeneration of fully-severed optic nerve by up to 1000um (>250% vs non-treated) from 1 dose
- Axonal regeneration was evident well beyond the transection site after 4-week period

EMTINB™ OCULAR TISSUE PENETRATION

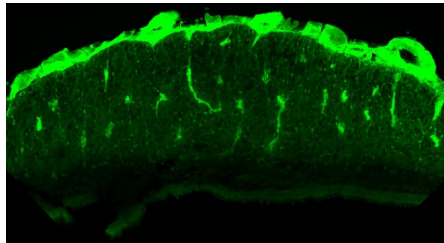
PK and tissue distribution studies in rabbits administered EmtinB via intravitreal delivery demonstrated sufficiency of monthly dosing

Retina: EmtinB labelled with OG488 present in retinal tissue

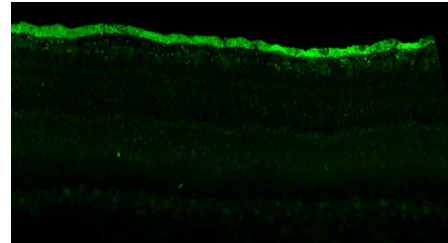
6-hours



24-hours

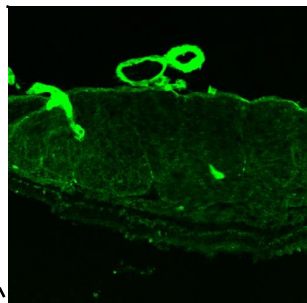


6-days

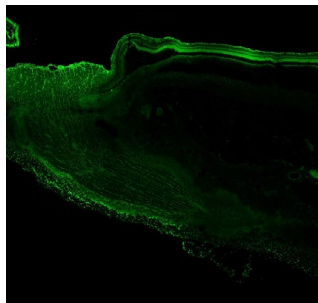


Optic nerve: EmtinB labelled with OG488 present in optic nerve tissue

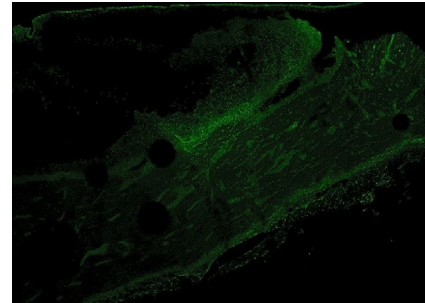
9-hours



24-hours



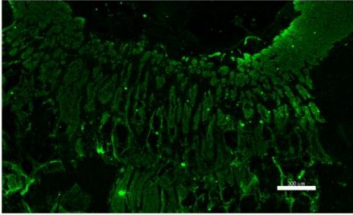
6-days



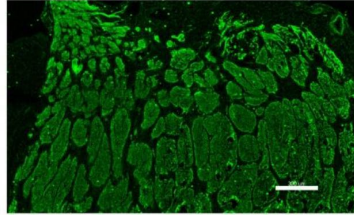
EMTINB™ IS NEUROPROTECTIVE IN GLAUCOMA

Demonstrated neuroprotection in pig model of IOP glaucoma

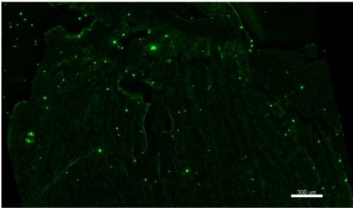
NFHp Non-treatment



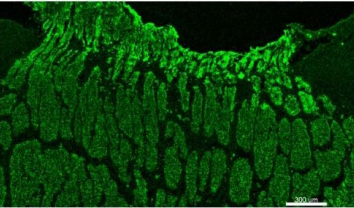
NFHp EmtinB



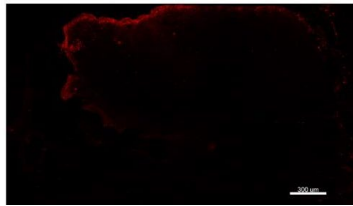
Tubulin Non-treatment



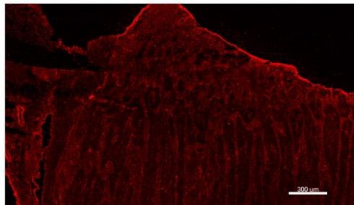
Tubulin EmtinB



MAP Non-treatment

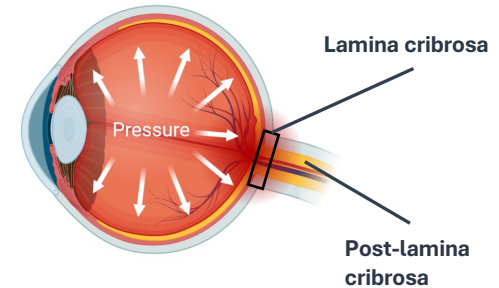


MAP EmtinB



GLAUCOMA PIG MODEL

- Increased intraocular pressure pig model replicates severe human glaucoma pathology; **positive results in this model indicate disease modifying potential of EmtinB**
- Disruption of cytoskeleton proteins and neurofilaments in neuronal tissue are used as markers for axonal damage; EmtinB treatment significantly increased **NFHp**, **Tubulin** and **MAP** biomarkers of the optic nerve (lamina and post-lamina cribrosa regions)



RESEARCH PARTNERS

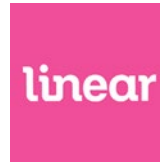
Partnering with global leaders in contract research

NEUROLOGY

OPHTHALMOLOGY

EXPLORATORY

MANUFACTURING



FOR MORE INFORMATION:

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CEO & Managing Director

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