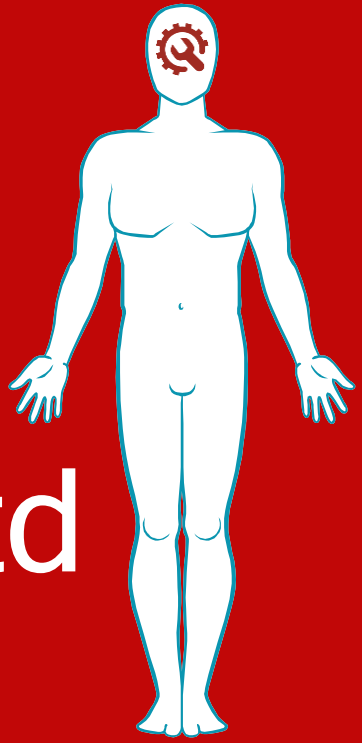
NeuroScientific Biopharmaceuticals Ltd

ASX.NSB



NeuroScientific
BIOPHARMACEUTICALS

Novel drug therapies for neurodegenerative conditions

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CORPORATE OVERVIEW

- Completed IPO listing @20c on the ASX on the 27 July 2018
- Lead candidate funded through to completion of Phase I
- Pipeline of potential therapeutic candidates in multiple indications with strong IP protection

Capital Structure		
ASX code	NSB	
Shares on issue	78.3M	
Options (20c exp 7/03/2021)	60.7M	
Price (close 21/10/2019)	$0.235	$0.435 12m High $0.130 12m Low
Market cap	$18M	
Cash at end of June Quarter	$5.0M*	
McRae Investments Pty Ltd	18.8M (24%)	

**$553k options exercised in August 2019*

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LEADERSHIP

MATT LIDDELOW MPharm

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

MD & CEO

STEPHEN QUANTRILL MBA

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

Non-executive Director

ANTON UVAROV PhD

Founding director of Actinogen an advanced Alzheimer's biotech company. Former Director of Dimerix and Imugene. Former Biotech Analyst with Citigroup, US

Executive Director

BRIAN LEEDMAN MBA

Co-founder of ResApp Health, Imugene and Oncosil Medical. Former Director of Alcidion Limited and Chairman of Ausbiotech (WA)

Non-executive Chairman

TREATMENT MARKETS WITH UNMET NEED

Alzheimer's disease

48M people globally
have dementia

70% of dementias
Alzheimer's disease

US $818B global
economic burden

US$5B drug sales pa

Optic nerve conditions

5% of population
suffer vision loss due to damaged optic nerve

60M people
affected by glaucoma

US$3B sales pa

ALZHEIMER'S DISEASE: The need for novel therapeutics

Drugs targeting the beta-amyloid protein have all failed in late-stage clinical trials…

- Pathology of Alzheimer's disease still not definitive
- Drugs may have been administered too late
- Patient selection for clinical trials
- 20-years of research and BILLIONS of $ focused on beta-amyloid plaques has not translated to any effective treatment

Frequency of Alzheimer's disease could be reduced by 50% if the onset could be delayed by 5-years

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LEAD CANDIDATE: EMTINB

NOVEL

- Modeled on Metallothionein (MT-II) - a well known neuroprotective and neurogenerative compound, with EmtinB showing superior drug properties
- Binds LRP-1 receptors – novel Mechanism of Action (MOA)
- Stops cell death & stimulates regeneration

VALIDATED

- Preclinical in vitro models – successfully repeated
- Animal models demonstrated efficacy and unique properties

MULTIPLE INDICATIONS

- MOA: LRP-1 receptor ubiquitous
- Not directly targeting a process of disease

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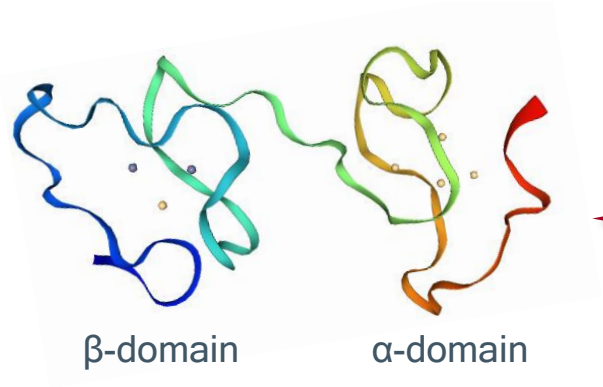
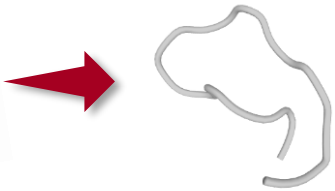
EVOLUTION OF EMTINB

MT-II Structure



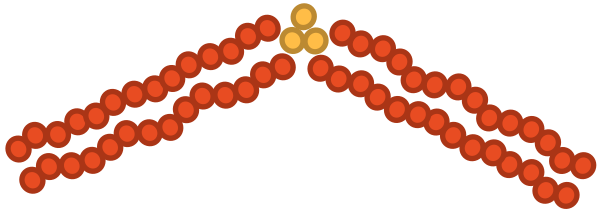
- 61 amino acid length
- Binds divalent metal ions
- Difficult to manufacture

EmtinB Peptide



- 14 amino acid length
- Isolated from the β-domain of MT-II protein

EmtinB Peptide Dendrimer



- Synthesised as a dendrimer:
  - Increased potency and stability

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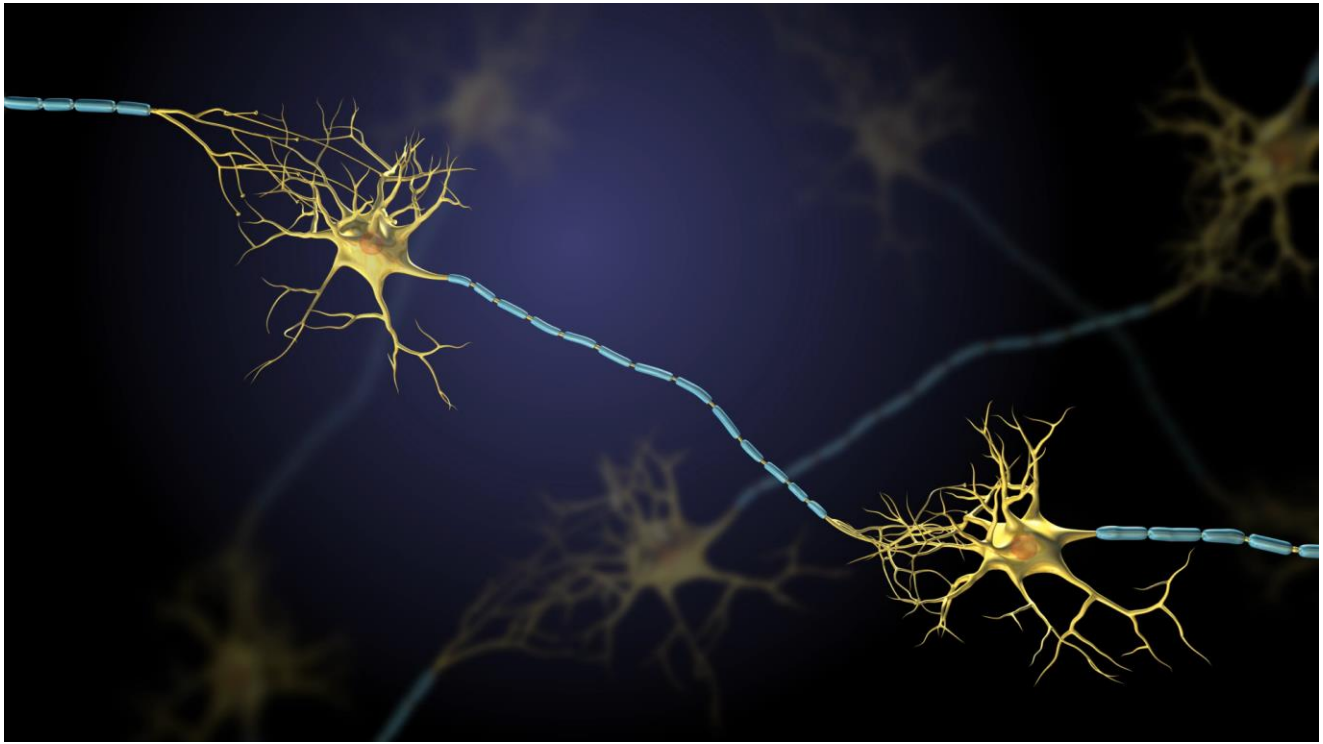
EMTINB MECHANISM OF ACTION: Binding LRP-1 receptor



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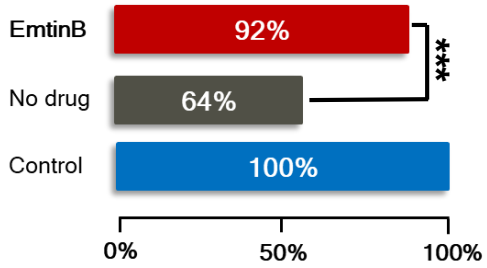
EMTINB SCIENTIFIC DATA
Preclinical survival

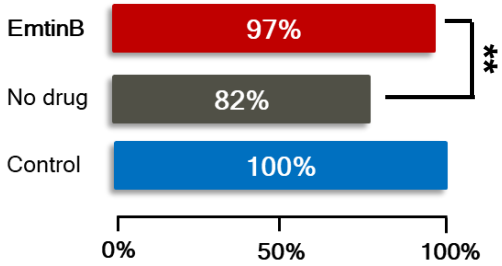
Cortex

Cell survival: 48-hour incubation period



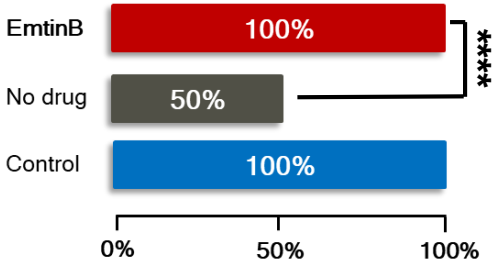
Hippocampus

Cell survival: 24-hour incubation period



Hippocampus: Alzheimer's model

Cell survival: 24-hour incubation period



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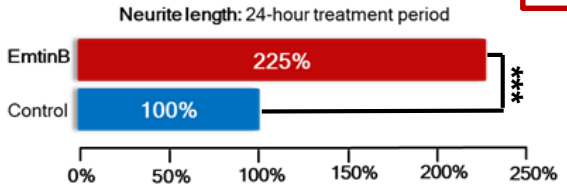
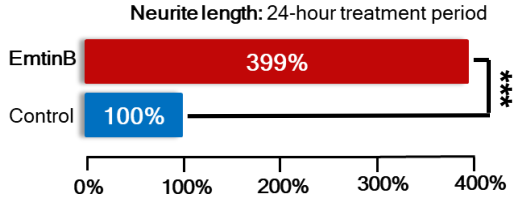
EMTINB SCIENTIFIC DATA
Preclinical regeneration

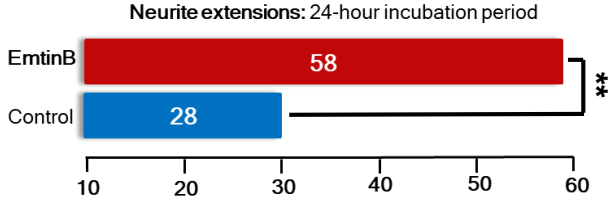
Cortex



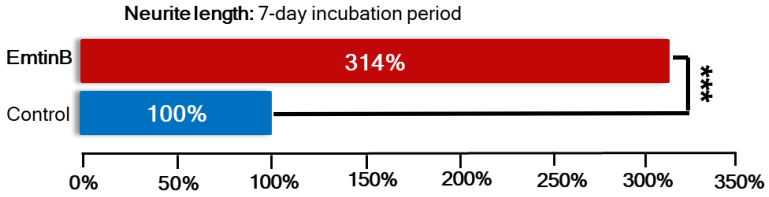
Hippocampus



Hippocampus: injury model



Spinal cord: injury model



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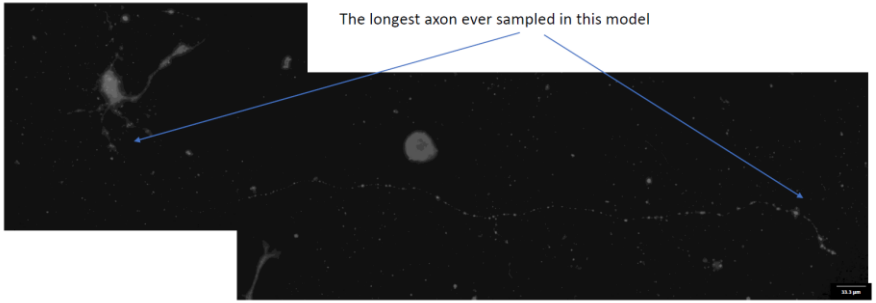
EMTINB SCIENTIFIC DATA
Spinal cord injury model

- Primary neurons isolated from spinal cord tissue of adult rats
- EmtinB (30µg/mL) neuron regeneration >300% vs. untreated control
- EmtinB (30µg/mL) neuron regeneration >2x Copaxon®; marketed drug for Multiple Sclerosis
- EmtinB significantly increased synaptic connections (18) vs. control (1.8) and Copaxon® (12)
- EmtinB stimulated longest axon ever recorded in this model



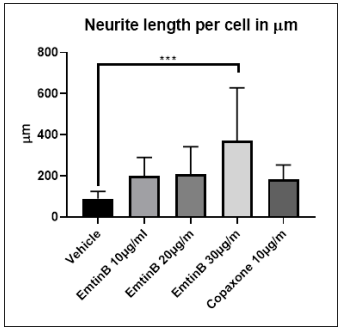


Figure 1: Mean neurite length per cell.

***p<0.001 vs. vehicle using one-way ANOVA followed by Tukey test.

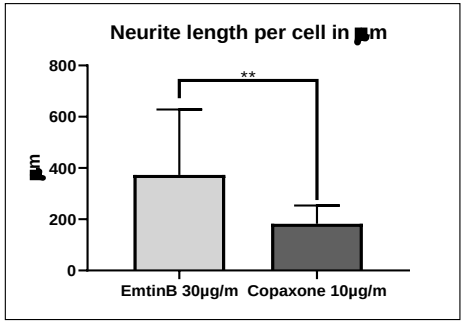


Figure 2: Mean neurite length per cell. EmtinB (30 µg/ml) vs. Copaxone (10 µg/ml).

**p<0.01 vs. Copaxone using T-test.

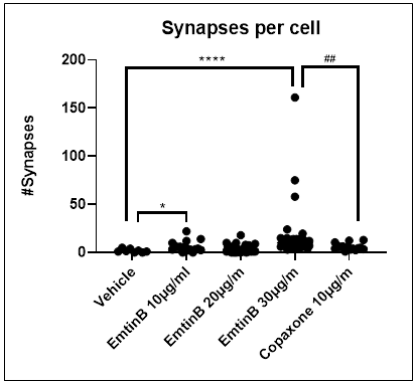


Figure 3: Mean number of synapses per cell

* p<0.05 vs. Vehicle using Kruskal-Wallis test.
p<0.01 vs. Copaxone 10 µg/ml using Kruskal-Wallis test.
**** p<0.0001 vs. Vehicle using Kruskal-Wallis test.

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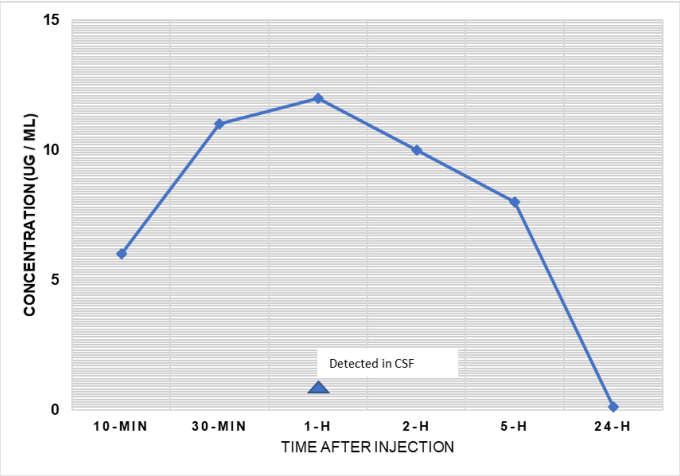
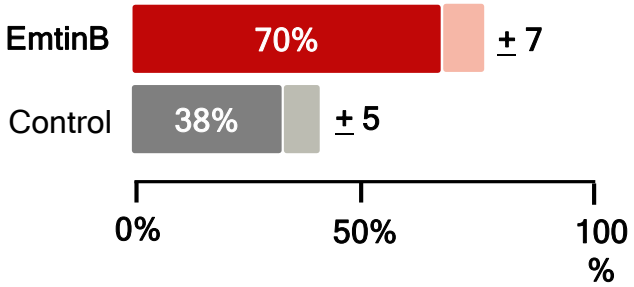
EMTINB SCIENTIFIC DATA
Preclinical studies: animal models

Crosses the blood brain barrier



Slowed progression of disease (memory impairment) by >80% in Alzheimer's animal model

Cognition: treatment for 48 days



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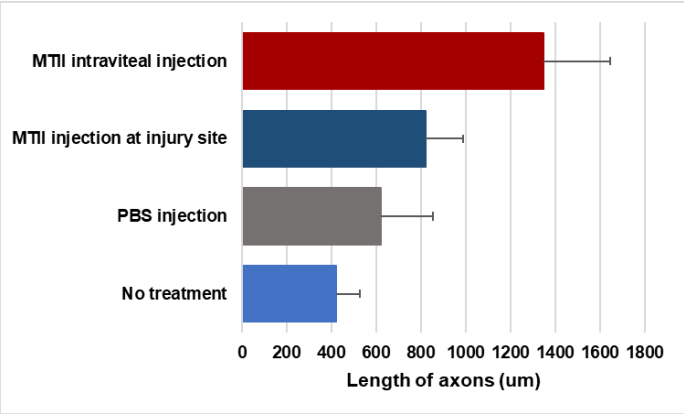
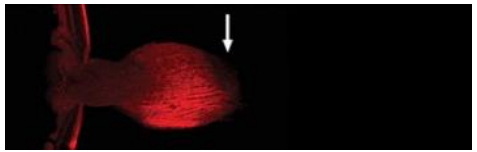
SUPPORTING SCIENTIFIC DATA
Regenerating the optic nerve

- Precursor to EmtinB (MT-II) stimulated regenerative growth of optic nerve after complete surgical transection
- Promotes axonal regeneration through an inhibitory environment in vivo

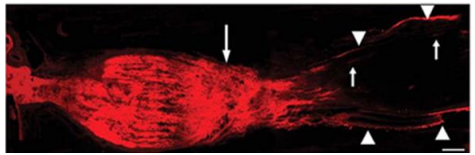
Optic Nerve Growth



No treatment – post transection



Treatment



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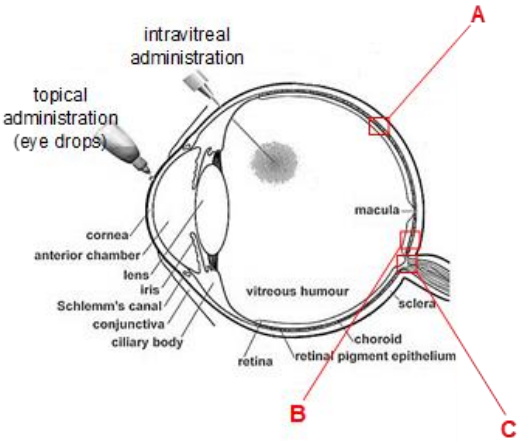
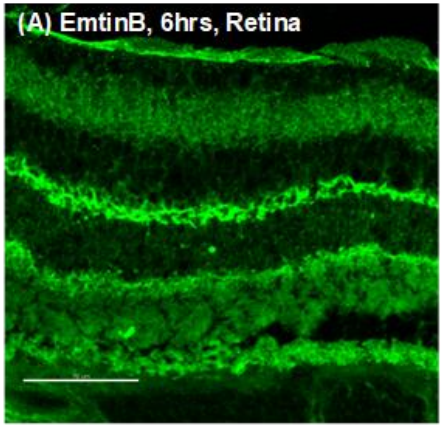
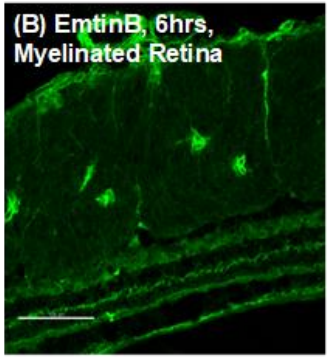
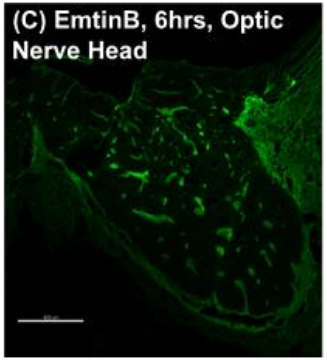
EmtinB Can be a Novel Treatment for Glaucoma with Disease-Modifying Potential









- New data demonstrates the ability of EmtinB to penetrate the retina and optic nerve of the rabbit eye with no side effects
- Data from rabbit study also indicates that EmtinB could be developed into a disease modifying eye drop formulation
- Previously shown that Metallothionein (EmtinB is modeled on Metallothionein) is a powerful promoter of axonal regeneration of the completely severed mature optic nerve in rat model
- Data form a breakthrough study in pig Glaucoma model expected by YE2019

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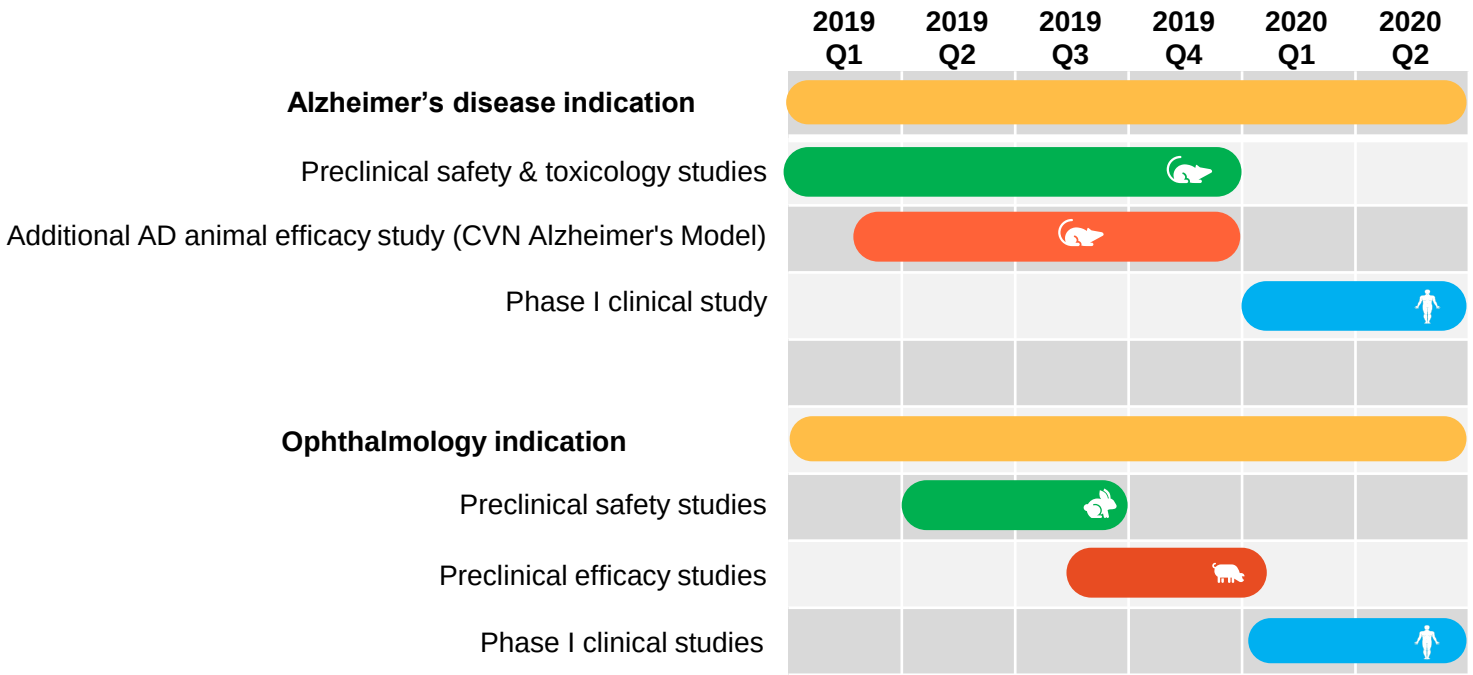
EMTINB DEVELOPMENT SCHEDULE



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STRATEGIC PARTNERSHIPS

COVANCE
SOLUTIONS MADE REAL®

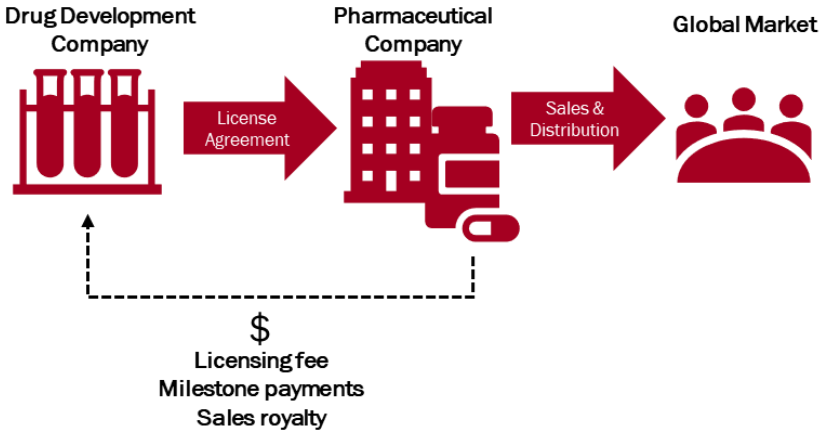
- Partner for preclinical studies
- Managed >3300 unique compounds
- >500 IND/CTD programs in the last 5-years
- Offer complete development solution from preclinical to clinical to market

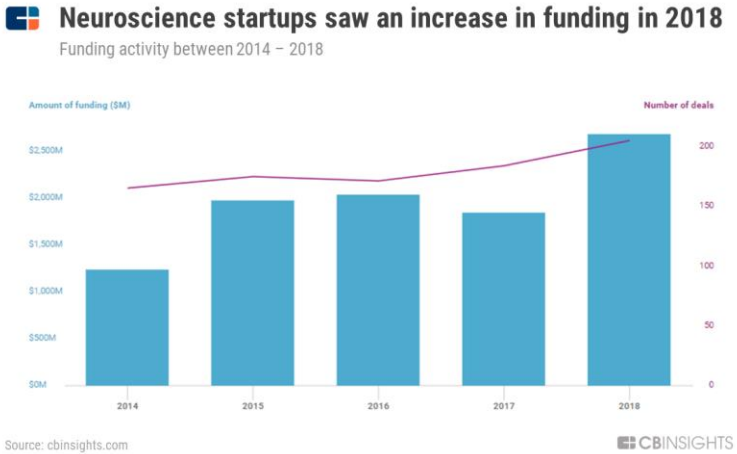
Lions Eye Institute

- Partner for ophthalmology studies
- Developed 1st artificial cornea
- Developed 1st transgenic animal model for macular degeneration
- Glaucoma treatment recently acquired by global pharma Allergan

BUSINESS MODEL

- Company will seek to out-license EmtinB for late-stage clinical development
- Potential for multiple treatment indications will be attractive to “big pharma”





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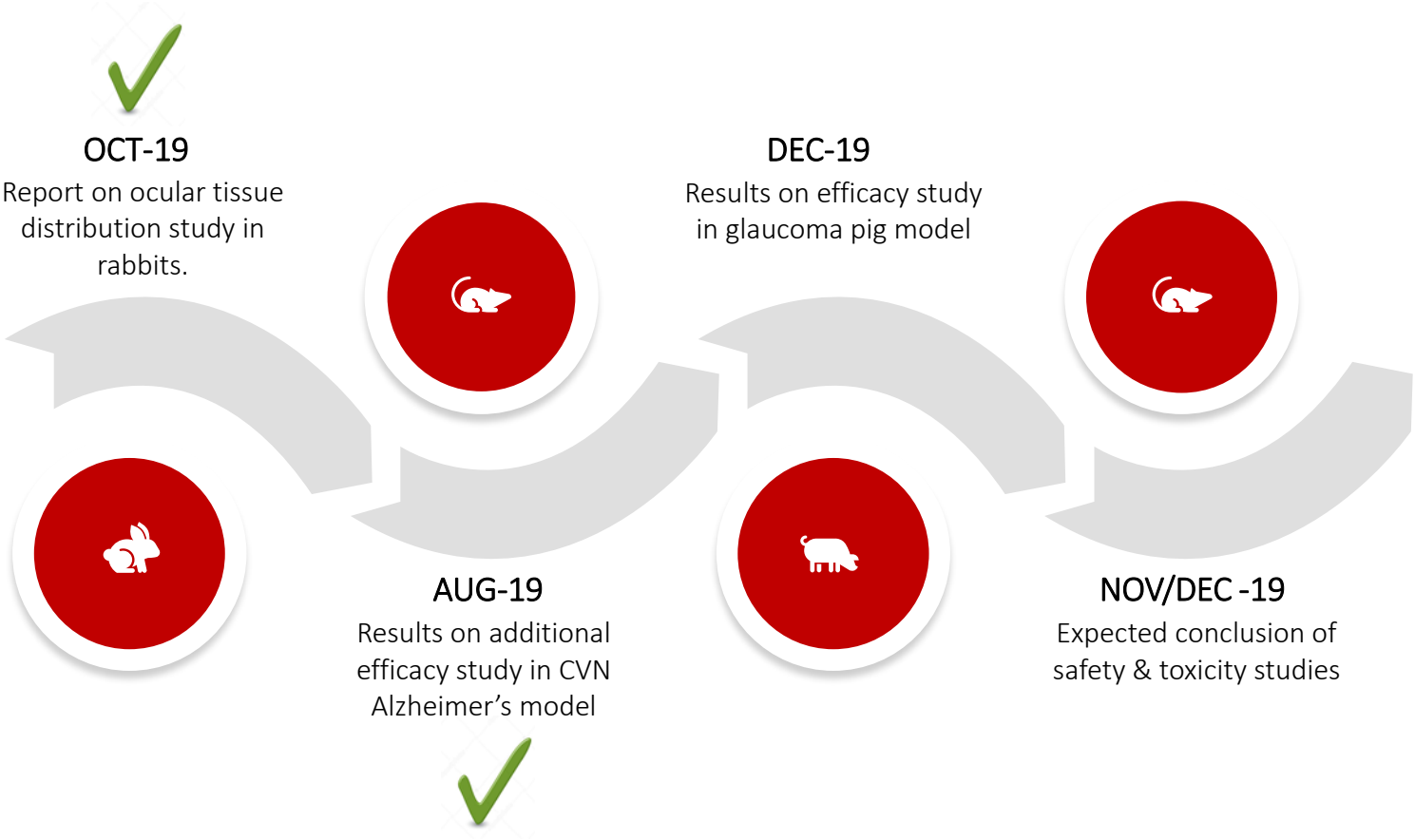
KEY MILESTONES



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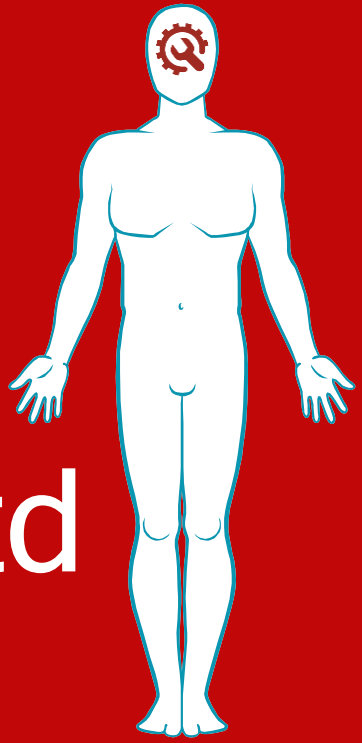

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Novel drug therapies for neurodegenerative conditions