INVESTOR PRESENTATION

JULY 2013

Dr Richard Treagus – Executive Chairman

Larry Glass – CEO and Managing Director
Forward Looking Statement

This presentation contains forward looking statements that involve risks and uncertainties. Although we believe that the expectations reflected in the forward looking statements are reasonable at this time, Neuren can give no assurance that these expectations will prove to be correct. Actual results could differ materially from those anticipated. Reasons may include risks associated with drug development and manufacture, risks inherent in the regulatory processes, delays in clinical trials, risks associated with patent protection, future capital needs or other general risks or factors.
Company Snapshot

- **ORIGINS**
  - Formed in 2001
  - IP rights acquired from the University of Auckland
  - Listed on the ASX in February 2005
  - Partnership established with the US Army in 2009

- **KEY STRATEGIC RELATIONSHIPS**
  - US Army Medical Research & Materiel Command
  - International Rett Syndrome Foundation
  - Fragile X Research Alliance
  - Fragile X Drug Validation Initiative

- **OPERATIONS**
  - New Zealand domiciled
  - Finance and shareholder relations relocated to Melbourne
  - Clinical development consolidated in the US
Leadership

BOARD OF DIRECTORS

- Richard Treagus (Chairman)
  - Former CEO Acrux Limited

- Trevor Scott
  - Head of Audit Committee

- Bruce Hancox
  - Former Group CEO Brierley Investments Limited

- John Holaday
  - CEO QRx Pharma

- Larry Glass (Managing Director)

MANAGEMENT

- Larry Glass (CEO)
  - 9 years with Neuren

- Jon Pilcher (CFO) mid-Aug 2013
  - Currently CFO Acrux Limited

- Joe Horrigan (CDMA)
  - Neuropsychiatrist
  - Former Head of Medical Research at Autism Speaks
IGF-1 is a naturally occurring growth factor in the brain
- Produced following brain injury and stress
- One of the brain’s self-repair mechanisms

Glypromate (GPE) is considered the active part of the molecule

NNZ-2566 is a synthetic analogue of Glypromate

NNZ-2566 influences the processes underlying acute and chronic CNS disorders
- Inflammation
- Microglial function
- Synaptic plasticity (inter-neuronal communication)
- Abnormal electrical activity (e.g., seizures)

NNZ-2566 potentially treats a wide range of neurological conditions

NNZ-2591 is in the same class of peptides
NNZ-2566

- Pre-clinical efficacy has been demonstrated in animal models of TBI, Fragile-X and Rett Syndrome
- Administered *intravenously* or *orally*
- 40-50% orally bioavailable, with or without food
- Crosses the blood brain barrier
- Well tolerated in high doses
- Validated manufacturing process in the USA
- Patent protected
NNZ-2591

- Synthetic analog - cyclic dipeptide
- 100% orally bioavailable
- Testing in Fragile X model completed; results comparable to NNZ-2566 at 1/3rd the dose
- US Army working on mechanism of action under Cooperative R&D Agreement
Intellectual Property

- Broad patent estate with no royalties payable
  
- **NNZ-2566** and other GPE analogues
  - 7 issued patents covering composition, oral formulation and methods of use
  - 7 pending applications
  - Remaining patent life between 9 and 15 years
  - Additional market exclusivity may be available via Orphan and Pediatric Drug designations

- **NNZ-2591** and other bicyclic analogues
  - 3 issued patents covering composition, formulation and methods of use
  - 3 pending applications
  - Remaining patent life between 11 and 15 years
Pre-Clinical Studies
Dendritic Spines - NNZ-2566 in Fragile X (fmr1) model

Dendritic spine morphology

Wild-type

fmr1 knockout

fmr1 knockout + Vehicle

fmr1 knockout + NNZ-2566 (50 nM)
**Behaviour - NNZ-2566 in Fragile X (fmr1) model**

- **fmr1** KO mice show a significant difference to Wild Type controls
- NNZ-2566 treated **fmr1** KO mice are not significantly different from vehicle treated Wild Type mice
- **NNZ-2566 significantly normalizes behaviour of fmr1** KO mice

(N = 10 per group)
Enlarged testes - NNZ-2566 in Fragile X (fmr1) model

- **fmr1 KO** mice show an increase in testis weight, as do human Fragile X Syndrome patients.

- **After NNZ-2566 administration to fmr1 KO mice, testis weight is not significantly different from controls**.

- **NNZ-2566** has no significant effect in Wild Type mice.
Key Clinical Programmes
NNZ -2566 Clinical Strategy

**ACUTE**
(Inflammatory)
- Traumatic Brain Injury (TBI)
- Concussion (mild TBI)

**CHRONIC**
(Neurodevelopmental)
- Rett Syndrome
- Fragile X
TBI and Concussion

- NNZ-2566 improves functional recovery, preserves cognitive function, inhibits post-injury seizures

- > 1.5 million head injuries annually in the US alone; >75% are mild or concussion

- Leading cause of death and disability, especially in young people and the elderly

- Partnership funding of ~US$23 million by US Army

- Only late-stage competition is progesterone

- $4+ billion estimated global market potential
Traumatic Brain Injury (INTREPID)

- Phase II randomized (2:1), placebo-controlled, fixed dose escalation, safety and efficacy study

- 260 subjects, ages 16-75 with moderate to severe TBI (Glasgow Coma Scale 4-12)

- NNZ-2566 IV solution or placebo administered within 8 hours of injury as a 20 mg/kg bolus followed by 72 hours of infusion at 1, 3 or 6 mg/kg/hr (30, 30 and 200 subjects, respectively)

- Endpoints: safety, functional status at 1 and 3 months, cognitive and neuropsychological function at 1 and 3 months, non-convulsive seizures and biomarkers in the first 5 days

- 2 protocols: LAR and EFIC

- Goal: 18 Level I and II US trauma centers with 10 under EFIC

- 114 subjects enrolled to date
Concussion (mTBI)

- Phase II randomized (1:1:1), placebo-controlled, fixed dose safety and efficacy study

- 132 subjects, 18-55 with mild TBI (Glasgow Coma Scale 13-15) and a pre-injury computerized neurocognitive assessment

- NNZ-2566 oral solution or placebo administered within 24 hours of injury at 35 or 70 mg/kg twice daily for 7 days

- Endpoints: safety, change from baseline cognitive function and time to return to pre-injury baseline cognitive function assessed at 1, 2, 4 and 8 weeks

- Sites: 1-2 US military training facilities

- Start date to be determined
Rett Syndrome

- Mutation in a gene on the X-chromosome
- 1 / 10,000 females (20,000 USA)
- Most physically disabling of the autism spectrum disorders
- Many girls live into adulthood, requiring total 24-hr-day care
- Profound disability and financial burden for >50,000 patients and families globally

Symptoms include:
- Loss of speech and motor control
- Compulsive hand movements
- Disorders of breathing and cardiovascular function
- Extreme anxiety
- Seizures
Rett Syndrome Phase II (RTT-001)

- Phase II randomized (2:1), placebo-controlled, dose escalation, safety and efficacy study

- Up to 60 (48 complete) female subjects ages 16-40 years

- Subjects stratified 1:1 based on mutation (correlates with severity)

- NNZ-2566 oral solution or placebo administered for 28 days following 3 days of dose titration up to 35 or 70 mg/kg b.i.d.

- Endpoints: safety, seizure activity, cardiac and respiratory irregularities, caregiver and clinician assessments of symptom severity and behaviour

- Sites: Rett Syndrome Centers at Baylor College of Medicine and University of Alabama

- 13 subjects enrolled to date
Fragile X Syndrome

- Mutation on the X-chromosome affecting both males and females

- The most common inherited cause of intellectual disabilities and the most common known cause of autism

- 1/4,000 males and 1/6,000 females (58,000 USA)

- Symptoms include:
  - Intellectual disabilities
  - Attention deficit, hyperactivity and autistic behaviour
  - Anxiety and unstable mood
  - Seizures (approximately 1 in 4)
Fragile X Syndrome Phase II (FXS-001)

- Phase II randomized (1:1:1), placebo-controlled, fixed dose, cross-over, safety and efficacy study
- Up to 72 (60 complete) male subjects ages 16-40 years
- NNZ-2566 oral solution or placebo administered for 28 days at 35 or 70 mg/kg b.i.d with cross-over to active for subjects initially receiving placebo
- Endpoints: safety, seizure activity, caregiver and clinician assessments of symptom severity and behavior, biomarkers
- Sites: Rush University Medical Center and up to 4 other Fragile X Syndrome centers
Strategy

- Demonstrate the therapeutic benefit of **NNZ-2566** in human subjects
- Expand treatments to include both **acute** and **chronic** conditions
- Potential to establish a “**gateway**” to autism and other neurodevelopmental disorders

Criteria for selecting therapeutic targets
- Significant unmet need and commercial opportunity with no approved drugs
- Regulatory advantages – eligible for **Fast Track, Orphan Disease, Breakthrough Therapy**
- Strong support from advocacy groups and other stakeholders

Realising value
- Elicit a “clinical signal” with NNZ-2566 in human subjects
- Advance the pre-clinical work with NNZ-2591
- Maintain dialogue with potential partners
Shareholding and Financial Position

Shares outstanding: 1.2b
Options outstanding: 269m
Closing price (29 July 2013): $0.10
52 week range: $0.021 – $0.115
Market capitalization: $120m
Current cash (30 April 2013): NZ$4.08m
Top 20 shareholders: 58% (approximate)
NEU:AX
Investment Summary

- **Patented drug analogues** of naturally occurring brain growth factors
- Potentially applicable to both **acute** and **chronic** neurological conditions – with large unserved markets.
- **Compelling pre-clinical efficacy data** in TBI, Fragile X and Rett Syndrome models
- Abbreviated regulatory pathways - with possible **Orphan drug** designation
- Experienced clinical and commercial management team
- Phase II clinical trials will report results from mid-2014
- Clinical data will provide the basis for partnering discussions
### Expected News Flow

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td>Initiate Fragile X Phase 2</td>
<td>2H-2013</td>
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<tr>
<td>Complete enrollment in Rett Phase 2</td>
<td>1H-2014</td>
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<tr>
<td>Top-line results for Rett Phase 2</td>
<td>2H-2014</td>
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