NervGen Pharma

Enabling the Nervous System to Repair Itself

CORPORATE PRESENTATION

February 14, 2023

Financial Disclosure Statement

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Forward-looking statements: Certain statements in this document about the Company's current and future plans, expectations and intentions, results, levels of activity, performance, goals or achievements, or any other future events or developments constitute forward-looking statements, including, without limitation, statements regarding the advancement of NVG-291 in clinical development, the timing of human trials and regulatory approval, the potential efficacy of the Company's products and technology, and the potential to identify, evaluate and develop other drug candidates. The words "may", "will", "would", "should", "could", "expect", "plan", "intend", "trend", "indication", "anticipate", "believe", "estimate", "predict", "likely" or "potential", or the negative or other variations of these words or other comparable words or phrases, are intended to identify forward-looking statements. Forward-looking statements are based on estimates and assumptions made by the Company in light of management's experience and perception of historical trends, current conditions and expected future developments, as well as other factors that the Company believes are appropriate and reasonable in the circumstances. Many factors could cause the Company's actual results, level of activity, performance or achievements or future events or developments to differ materially from those expressed or implied by the forward-looking statements, including those described in the "Risk Factors" section of the Company's Annual Information Form, Short Form Base Shelf Prospectus, financial statements and Management Discussion and Analysis which can be found on SEDAR.com. All clinical development plans are subject to additional funding. Readers should not place undue reliance on forward-looking statements made in this document. Furthermore, unless otherwise stated, the forward-looking statements contained in this document are made as of the date of this document, and the Company has no intention and undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law. The forward-looking statements contained in this document are expressly qualified by this cautionary statement.

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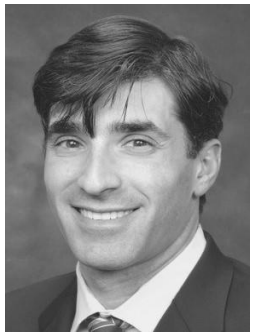
NervGen's Clinical Trials are Led by Experienced Drug Developers

Bill Radvak, BASc
Executive Chairman
& Interim CEO

- Co-founder of NervGen
- Previously CEO and Director of multiple start-up companies
- Founder and CEO of Response Biomedical, a publicly listed medical device company, which he led from its inception to a 90-employee sales and manufacturing company



Adam Rogers, MD
Interim President
& Board Member

- Co-founded Hemera Biosciences in 2010, a clinical stage gene therapy biotech company and assumed the role of CEO in 2017
- Oversaw all aspects of Hemera until the assets were acquired in December 2020 by Janssen Pharmaceuticals, a subsidiary of Johnson & Johnson
- Principal of Boston based PFP Biosciences Holdings and a board-certified ophthalmologist

Dan Mikol, MD, PhD
Chief Medical Officer

- 25+ years pharma experience and as practicing neurologist conducting clinical research
- Joined NervGen from Amgen where he was Executive Director and Global Therapeutic Development Head, Neurology and Nephrology
- Participated in development and/or commercialization of natalizumab (Tysabri), fingolomod (Gilenya), cladribine (Mavenclad), interferon-ß-1a and erenumab (Aimovig)

RESPONSE BIOMEDICAL Hemera Biosciences AMGEN NOVARTIS Biogen EMD SERONO

NervGen Highlights

NVG-291, a first-in-class *neuroreparative* drug candidate administered by subcutaneous injection, has the potential to **redefine treatment paradigms** by **repairing nervous system damage**

Improvement demonstrated across 6 different animal models in fine and gross motor control, sensory function, autonomic functions, visual acuity, memory & learning, in many cases **unprecedented**

Target indications address **very attractive commercial opportunities** with **significant unmet medical needs** in spinal cord injury, Alzheimer's, multiple sclerosis and stroke

Nerve **repair** mechanism allows for **low cost and short duration clinical trials**

Phase 1b/2a clinical trial for individuals with **acute and chronic** spinal cord injury **to be initiated in 2023** and **readout in the first half of 2024**

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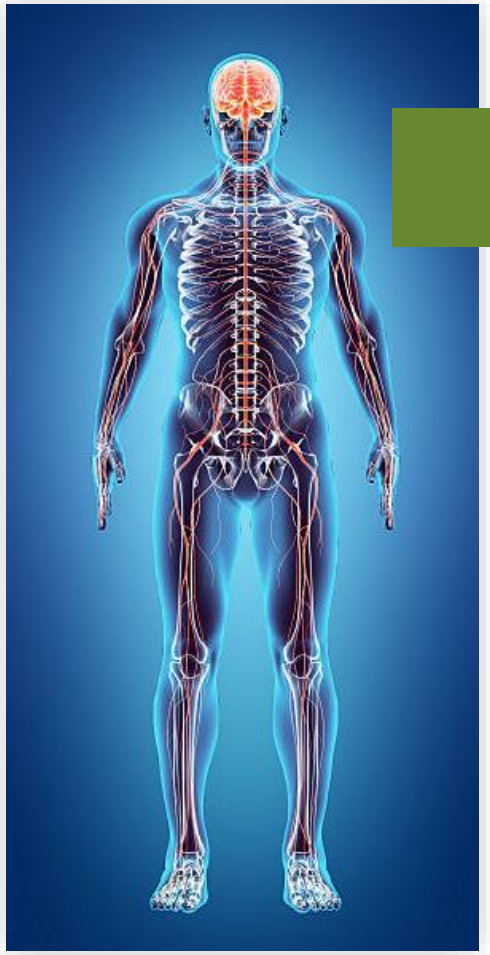
Revolutionizing the Treatment of Nervous System Damage



Everyone **KNOWS…**

The nervous system is a **complex system** that controls thought, movement, senses, etc.

Everyone **BELIEVES…**

The nervous system **cannot** repair itself

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NVG-291 – First-in-Class *Neuroreparative* Drug

Representative of Placebo Group
(Back Legs and Tail Dragging)

Representative of NVG-291 Group
(Back Legs and Tail Active)

Remarkable and robust repair across multiple models

Rink et al., 2018

SEVERE SPINAL CORD INJURY MODEL

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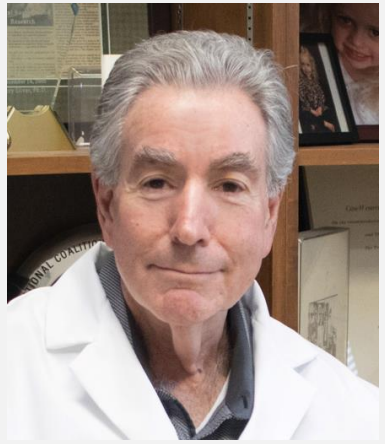
NervGen's Technology Was Invented by Dr. Jerry Silver

Known in the Spinal Cord Injury Field as the "Oracle"



Jerry Silver, PhD

Professor and Researcher,

Case Western Reserve University EST. 1826

Adjunct Professor,

Cleveland Clinic

Dr. Silver's Spinal Cord Research

- Discovered why the nervous system does not repair itself
- Identified the surprising molecules responsible

Dr. Silver Has Received Numerous Prestigious Awards Including

- Ameritec Prize
- Christopher Reeve-Joan Irvine Research Medal
- Jacob Javits Neuroscience Investigator Award

Dr. Silver's research revolutionized the understanding of the nervous system

STRONG IP PORTFOLIO

NervGen licensed the technology from Case Western and **owns global rights for all indications**

Intellectual property protection on NVG-291 until 2037

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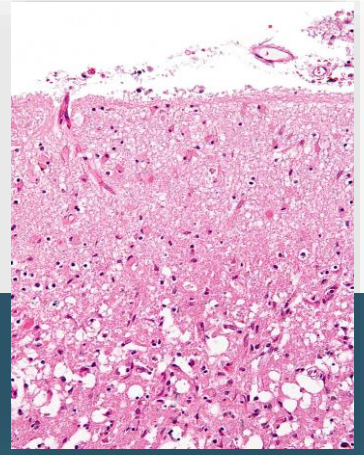
The Foundation of Our Technology

Pre 1990

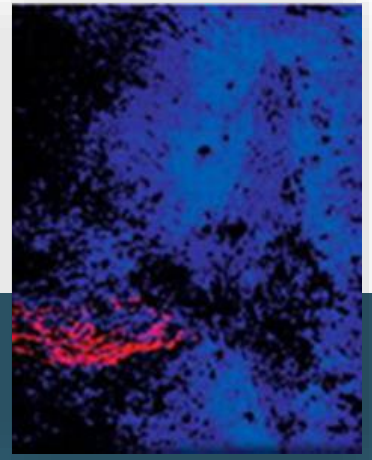
It was demonstrated that **glial scars** form at the site of injury to the nervous system and that scars in the brain cause neurons to be dysfunctional. Scars were later identified as the primary impediment of recovery



Micrograph of a glial scar

1990s

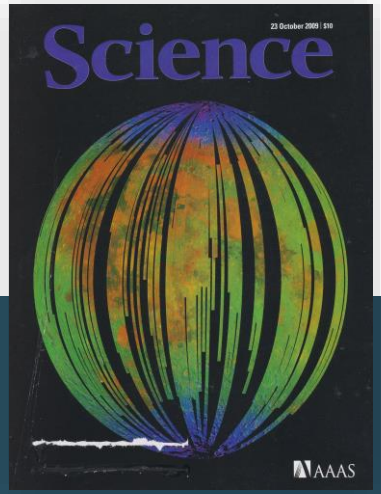
Dr. Silver identified a class of molecules called **CSPGs**, present in scars in the brain and spinal cord, that stop the body's natural repair mechanisms



Spinal cord nerve (red) trapped in the scar by CSPGs (blue)[1]

2009

Dr. Silver and collaborators from Harvard co-discovered that CSPGs bind to **PTPσ**, a receptor present in the brain and spinal cord and that this interaction stops cells from repairing damage



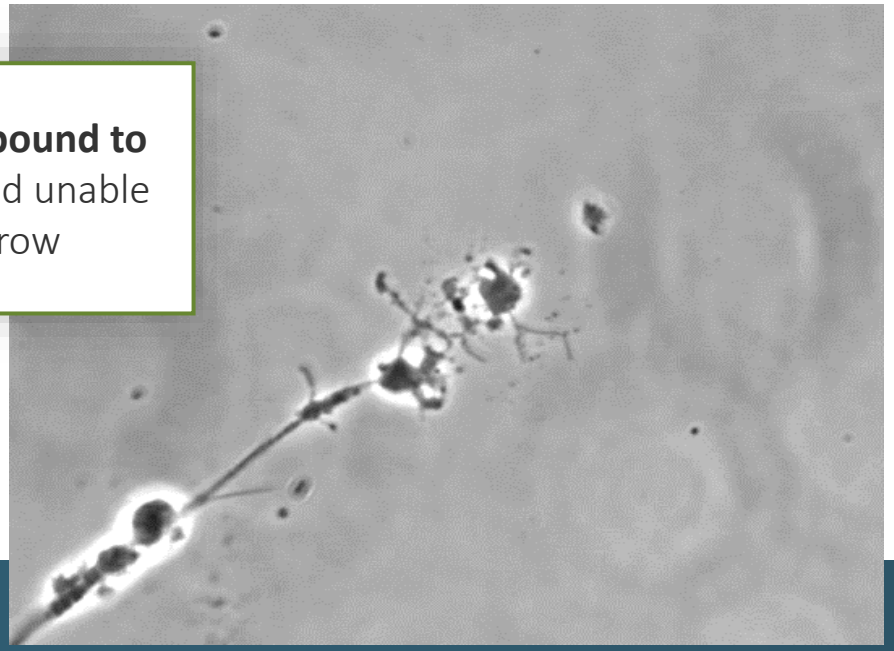
2015

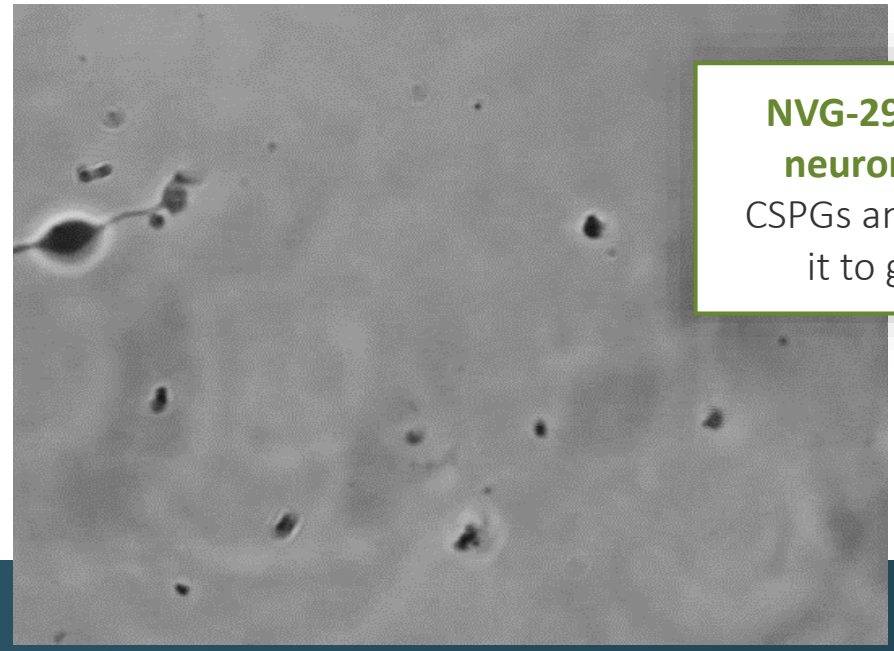
Dr. Silver's team designed a peptide derived from PTPσ and shown to relieve CSPG-mediated inhibition of nervous system repair. **NVG-291** enables the nervous system to repair damage by inhibiting CSPG signaling.

1. Shen, Y. et al. Science 326, 592–596 (2009)

NVG-291 Allows Neurons to Grow in the Scar

Neuron bound to CSPGs and unable to grow





NVG-291 frees neuron from CSPGs and allows it to grow

NVG-291, a 35 amino acid peptide, produced dramatic recovery in a spinal cord injury animal study:
the results published in Nature[1] are now cited in over 327 publications

Administered systemically by a
daily subcutaneous injection

Includes a transporter that
facilitates crossing the blood brain barrier

1. Lang, B. T. et al., Nature 2015 Feb 19;518(7539):404-8

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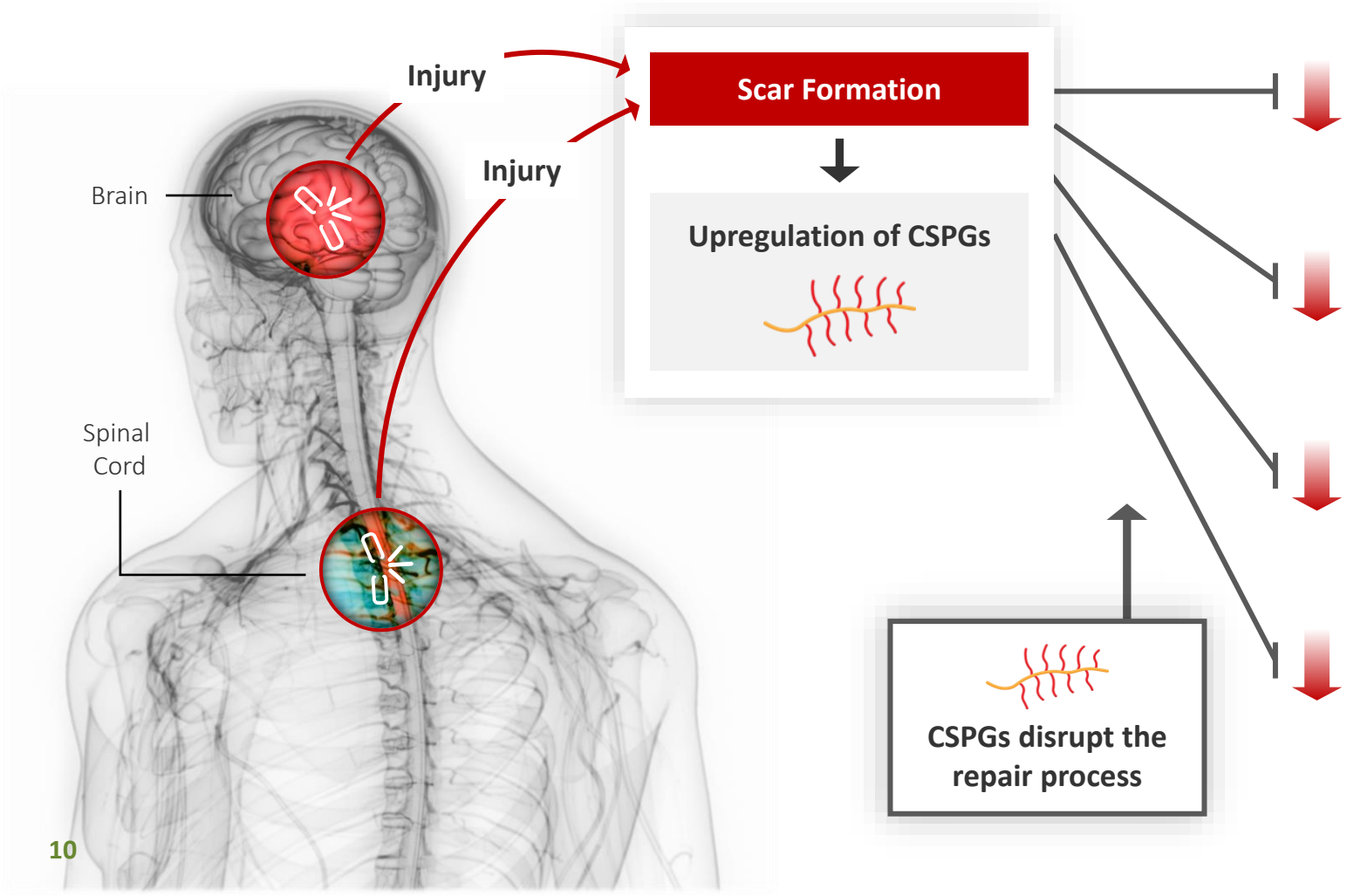
The Body's Powerful
Innate Repair Mechanisms
Disrupted by CSPGs



Repair Mechanisms:

Plasticity
The creation of new neuronal connections and rewiring of existing ones

Axonal Regeneration
The ability of a severed axon to reestablish connectivity with other neurons

Remyelination
The process of repairing damaged myelin – the fatty substance that protects axons and enables fast electrochemical transmission

Others
Stem cell preservation/migration
Autophagy
Microglial shifting

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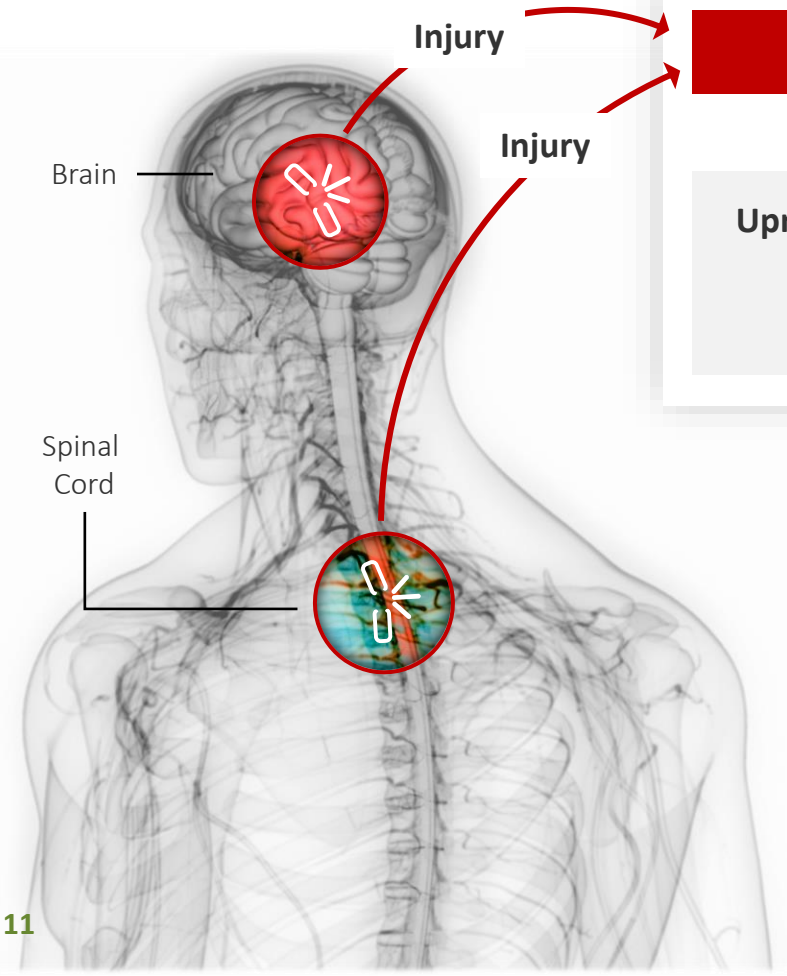
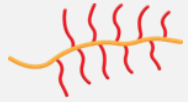
NVG-291

Takes the Brakes off Natural Repair Mechanisms



Scar Formation

Upregulation of CSPGs



NVG-291
Enables the nervous system to repair itself

Repair Mechanisms:

Plasticity

The creation of new neuronal connections and rewiring of existing ones

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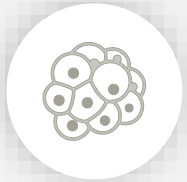

Others

Stem cell preservation/migration
Autophagy
Microglial shifting

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NVG-291 Broadly Restores Function

NVG-291 Has Demonstrated Dramatic Repair

in multiple animal models of neurological injury/disease, as documented in 15+ peer-reviewed papers

ACUTE SPINAL CORD INJURY

- Motor
- Sensory
- Bladder

1. Lang, B.T. et al., Nature, 518, 404–408. (2015).
2. Rink, S. et al., Experimental Neurology, 309, 148–159. (2018).
3. Ham, T.R. et al., Ann Biomed Eng, 47, 744–753. (2019).
4. Ham, T.R. et al., Materials Science and Engineering: C, 110, 110656. (2020).

CHRONIC SPINAL CORD INJURY

- Motor

1. Milton et al., bioRxiv, doi:10.1101/2022.08.01.502398 (not peer-reviewed)

PERIPHERAL NERVE INJURY

- Motor
- Sensory

1. Li, H. et al., Scientific Reports, 5, 1–14. (2015).
2. Yao, M. et al., Neuropharmacology, 144, 208–218. (2019).

MULTIPLE SCLEROSIS

- Motor

1. Luo, F. et al., Nature Communications, 9, 1–16. (2018).

OPTIC NEURITIS

- Visual

1. Niknam, P. et al., Molecular and Cellular Neuroscience, 99, 103391. (2019).

STROKE

- Motor
- Sensory
- Cognition (object recognition)

1. Luo et al., Cell Reports Volume 40, Issue 4, 111137, 2022
2. Yao et al., Journal of Neuroinflammation 19:207, 2022

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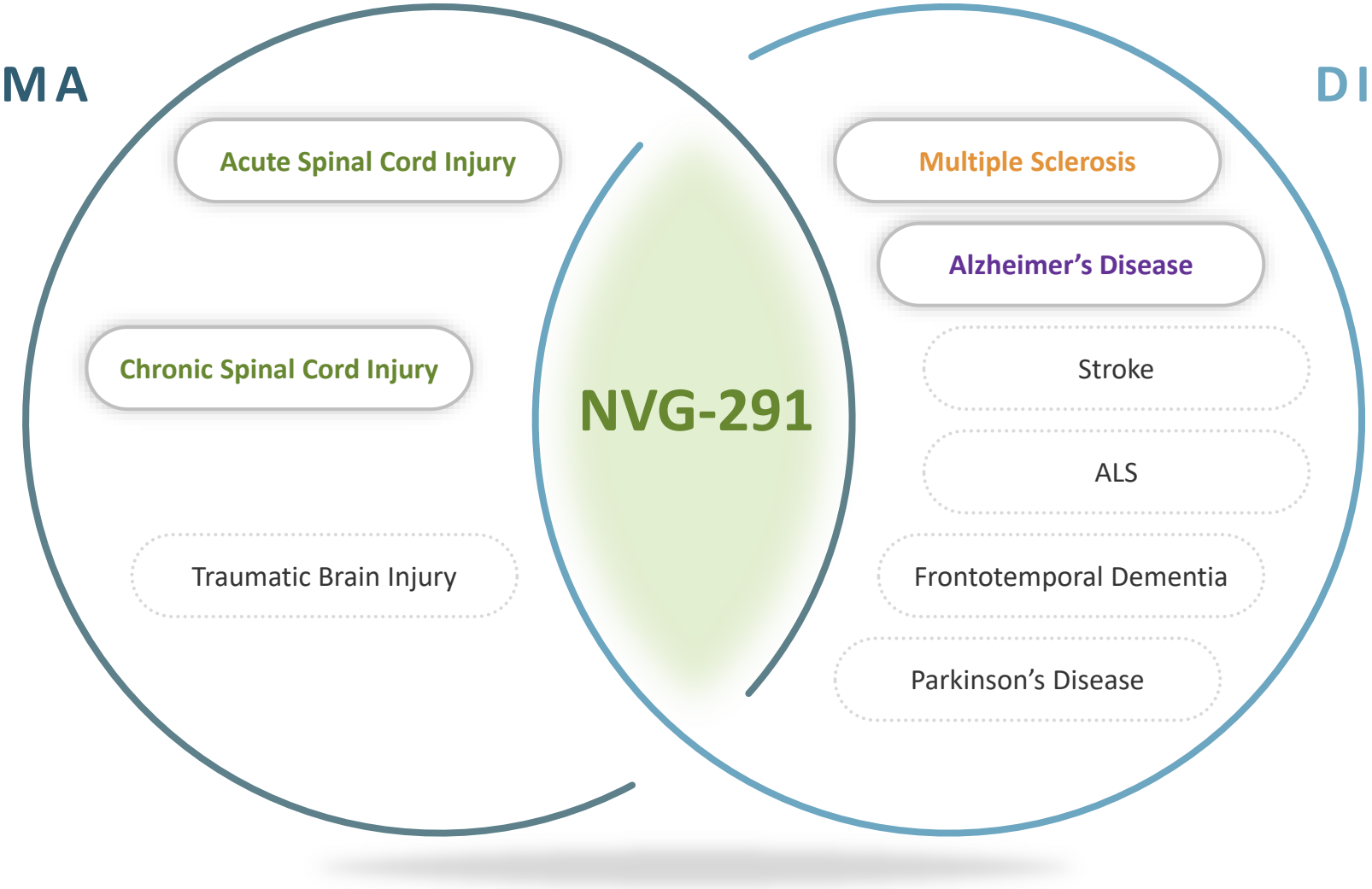
NVG-291: Potential to Treat All Types of Nervous System Damage



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NVG-291 - Phase 1 Clinical Trial in Progress

February 2023

Dosing of All Subjects - *COMPLETED*

SAD - 37 subjects, MAD* - 33 subjects

*Subjects dosed subcutaneously once a day for 14 days

- NVG-291 was well tolerated at a high dose
  - 170% higher than the equivalent highest dose in preclinical efficacy studies
  - >100x higher than the lowest efficacious dose in preclinical studies
- NVG-291 was rapidly distributed in the blood
- The calculated half-life was longer in humans than animals

Dosing of All Subjects in Phase 1 Clinical Trial completed February 2023

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Spinal Cord Injury

Acute and Chronic patients

- No FDA Approved Drug that Improves Function
- **NervGen's goal is to improve motor, bladder/bowel/sexual and/or sensory function** *in* High unmet need coupled with potential key clinical outcomes may provide opportunity for expedited regulatory approval
- Unprecedented preclinical results

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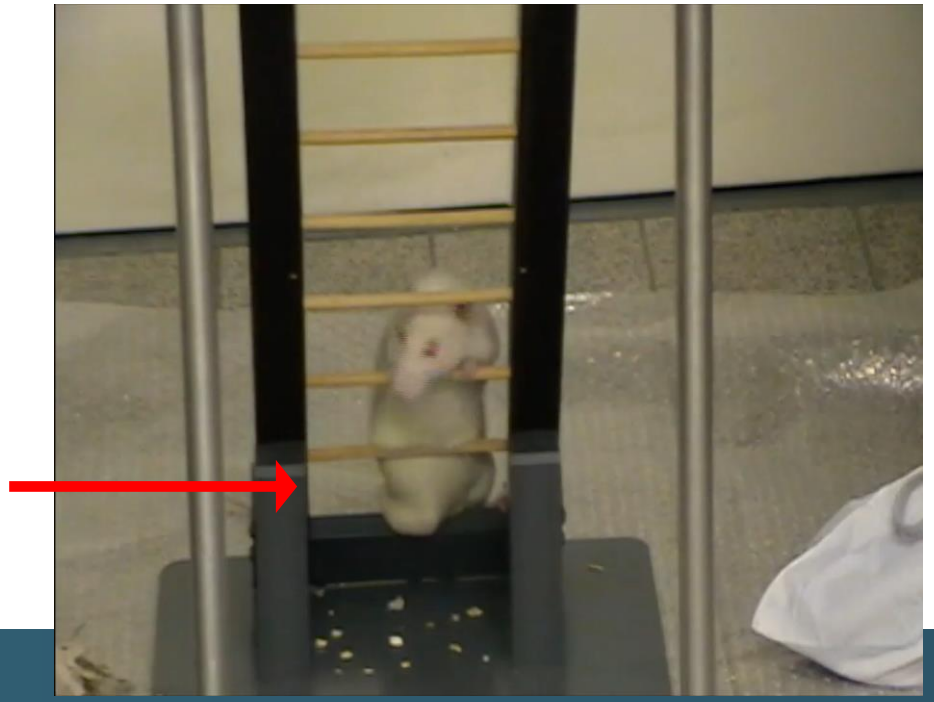
NVG-291 – Dramatically Repairs Spinal Cord Injury

SEVERE SPINAL CORD INJURY MODEL

Representative of Placebo Group



Hind legs are immobile

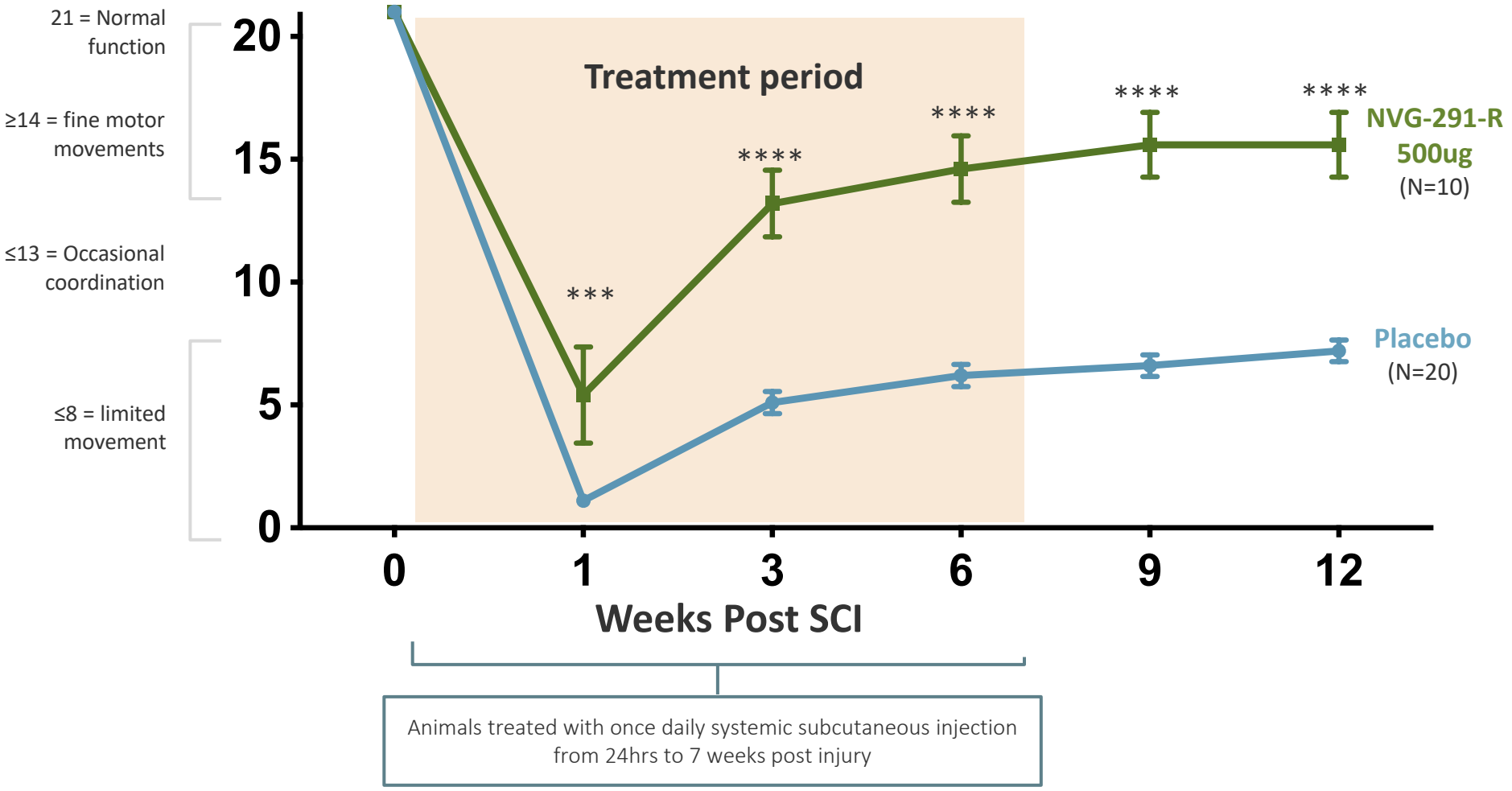
Representative of NVG-291 Group

Significant motor recovery: consistent coordination, toe clearance, tail held high consistently

Rink, S. et al., Experimental Neurology 309, 148–159 (2018)

Spinal Cord Injury – NVG-291-R Promotes Functional Recovery

BBB Scale = Standard measure of mobility



UNPRECEDENTED RESULTS

Extremely high response rate

Almost **complete recovery** in responding animals

Rink, S. et al., Experimental Neurology 309, 148–159 (2018)

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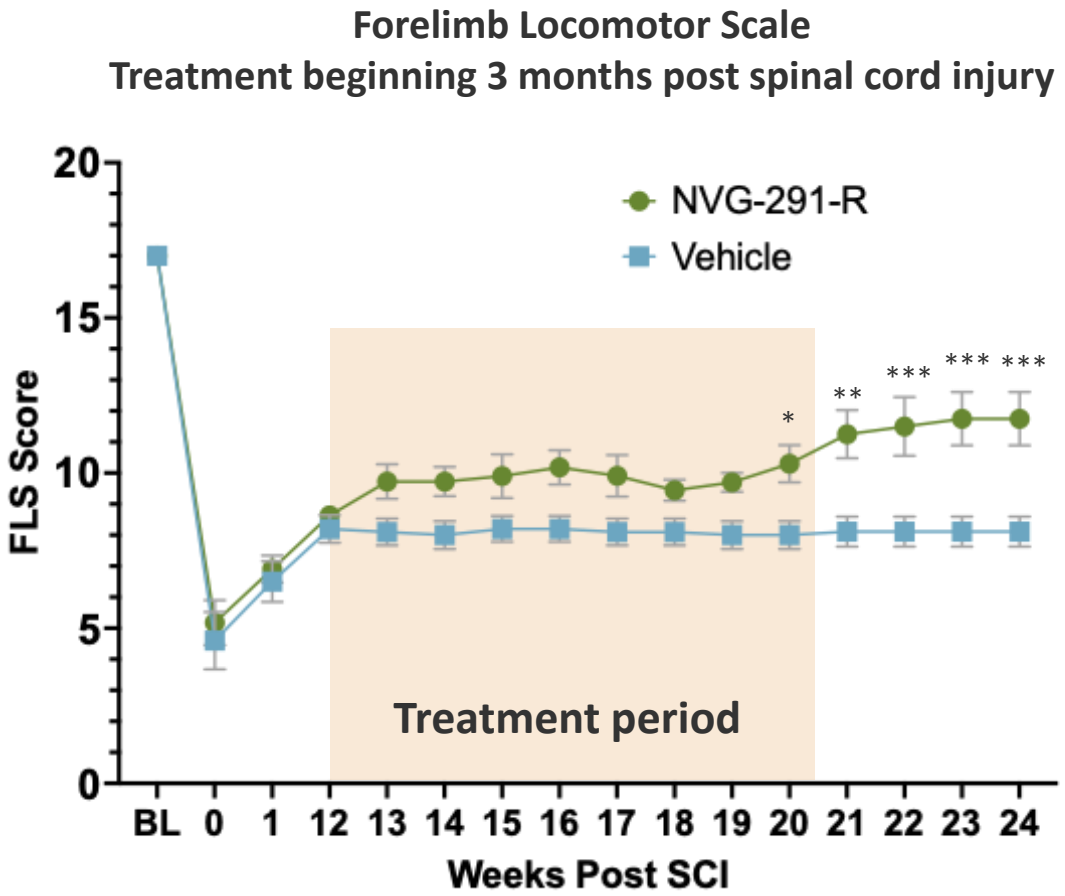
Chronic Spinal Cord Injury – NVG-291-R Promotes Functional Recovery



Animals treated with once daily systemic injection **starting 3 months post injury** for 60 days

Animals treated with NVG-291-R show **significant improvements** in forelimb recovery at 24 weeks post injury

Significant functional improvements observed when NVG-291-R was administered 3 months after a spinal cord injury

Milton et al., bioRxiv, doi:10.1101/2022.08.01.502398

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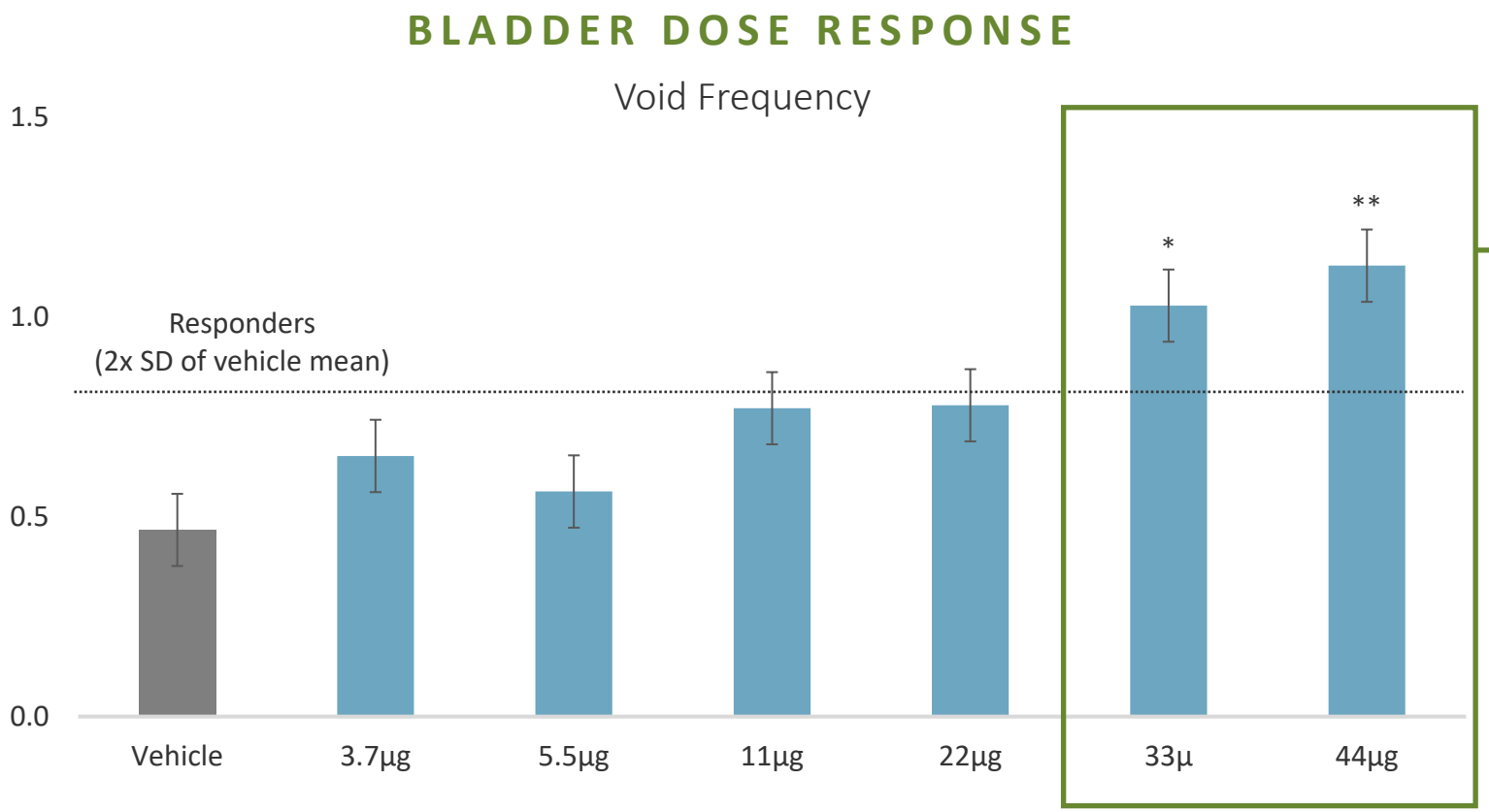
NVG-291 Improves Bladder Function



100% of animals in the two highest dose groups had improved bladder control function

NVG-291 treatment resulted in a dose dependent improvement in bladder function

Bladder function is a key quality of life measure in the paralyzed population

*p <0.05, ** p <0.01, n=5 per dosing group
Lang, B.T. et al., Nature 518, 404-408 (2015)

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NVG-291 Spinal Cord Injury Clinical Trial

Spinal Cord Injury Phase 1b/2a

~$10 million estimated cost

Chronic arm: 20 individuals that are **1 – 10 years post injury**
- 10 administered NVG-291 and 10 administered placebo

Sub-acute arm: 20 individuals that are **10 – 49 days post injury**
- 10 administered NVG-291 and 10 administered placebo

- Single center trial at Shirley Ryan AbilityLab, Chicago

  US News & World Report #1 Ranked Hospital for Physical Medicine & Injury Rehabilitation for 32 Consecutive Years
- Once daily subcutaneous injection for 3 months
- Primary endpoint: electrophysiology
- Secondary endpoints: numerous clinical assessments of upper and lower extremity function

World-class Advisory Board with experts in research, clinical design, functional assessments and biomarkers

James Guest MD, PhD, FACS University of Miami	World renowned surgeon/scientist; global expertise in clinical trial methodology
Linda Jones, PT, PhD Thomas Jefferson University	Expert consultant to pharma, universities, and non-profit organizations
Steven Kirshblum MD Rutgers New Jersey Medical	Nationally recognized expert; Spinal Cord Medicine textbook editor
Brian Kwon MD, PhD, FRCSC University of British Columbia	World renowned surgeon/scientist; authored >240 scientific publications, >35 textbook chapters
Daniel Lammertse, MD University of Colorado School of Medicine	Former Director and President of the American Spinal Injury Association

Spinal Cord Injury Financial Case

RARE DISEASE PRICING IN A SUBSTANTIAL ADDRESSABLE MARKET

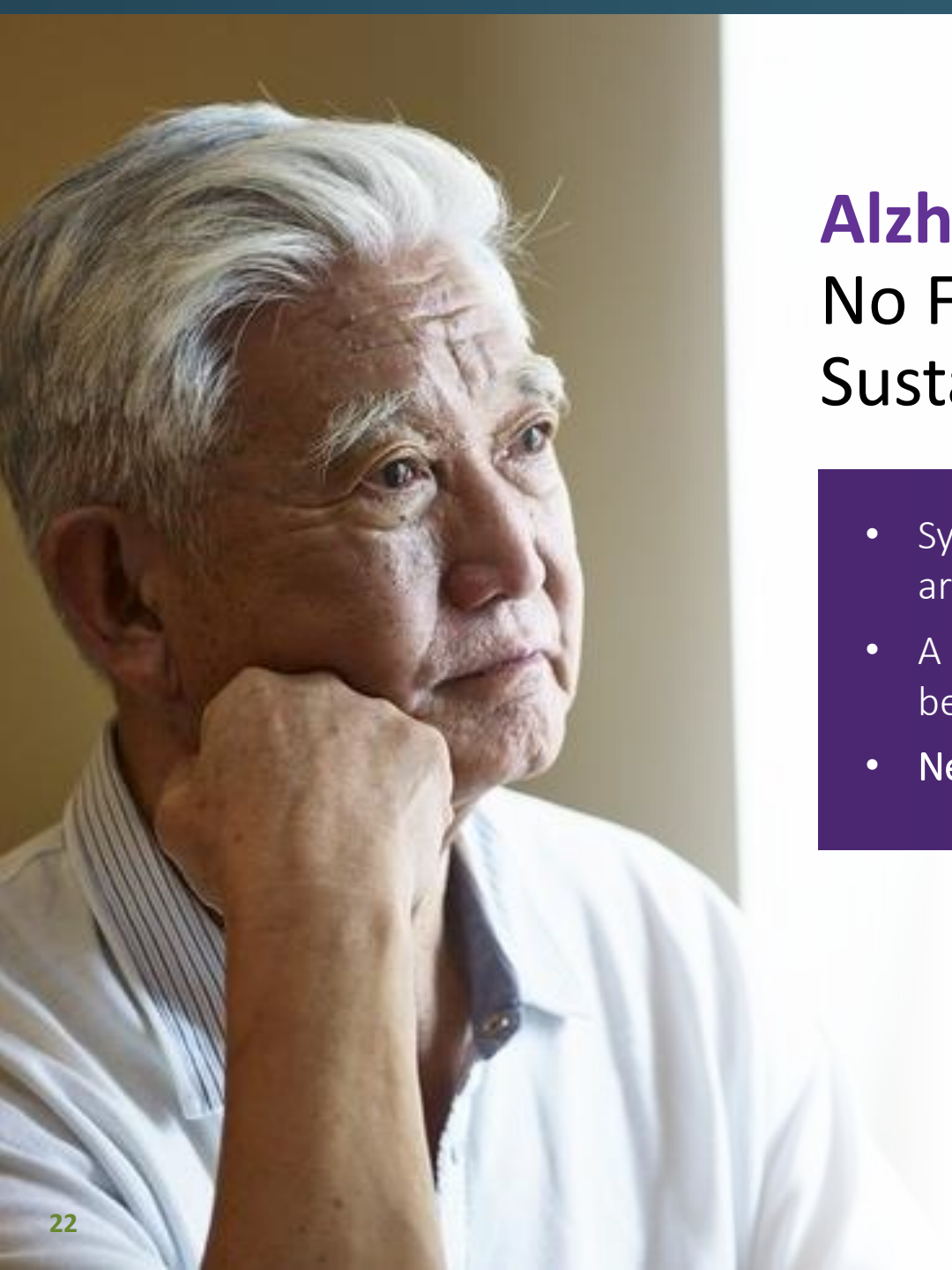
US MARKET	
Acute patients annually	~18,000
Chronic patients total	~300,000

REVENUE PROJECTIONS	
Target pricing per course	**$200,000**
Acute: US peak annual revenue	$500M++
Chronic: US total revenue	$10-12 Billion

- **Pricing Drivers:**
  - **Rare disease**, market range $150-350K/yr
  - **Orphan Status** in EU
  - Lifetime cost of care ranges from $1-5M

- **Large addressable markets** – chronic and acute
- **Short time to market,** potential expedited approval
- Multiple advocacy groups support
- **Grant funding available**

Attractive annual revenue for Acute bolstered by rapid, large expected revenue from Chronic



Alzheimer’s Disease

No FDA Approved Drug that Results in Sustained Improvement in Cognitive Function

- Symptomatic treatments to improve cognition in Alzheimer's disease are unsatisfactory
- A disease–modifying therapy approved in 2021 has questionable benefit in slowing cognitive decline
- NervGen’s goal is to repair damage and improve cognitive function

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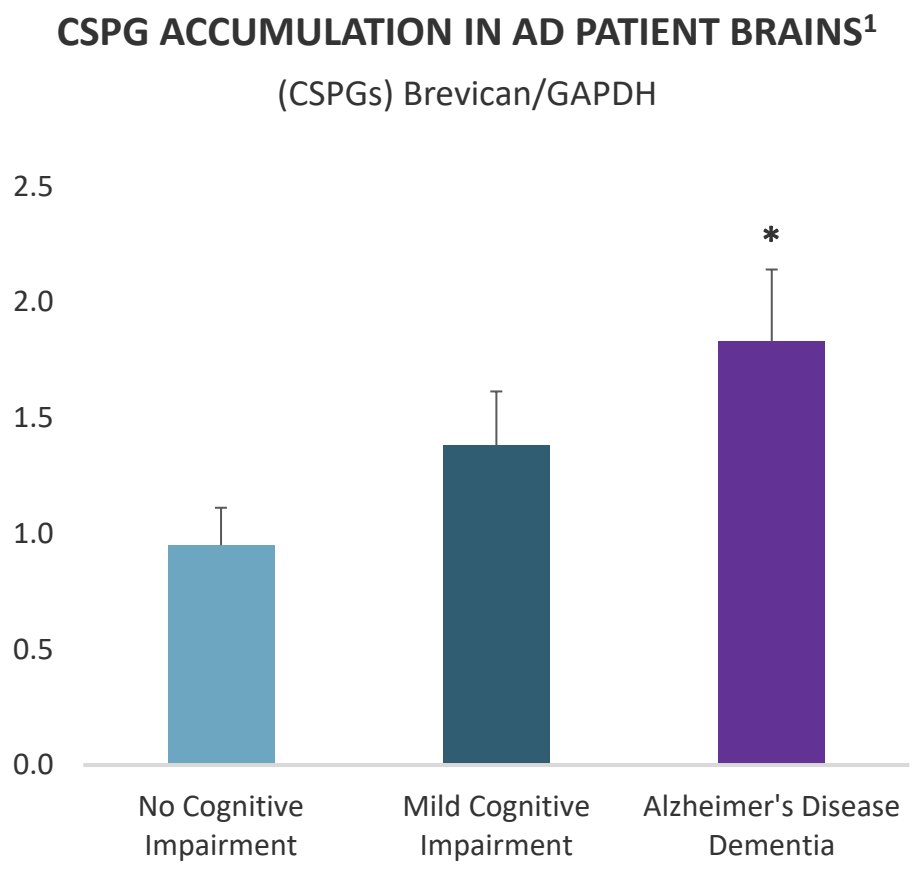
NVG-291 Pathway to Treat Alzheimer's Disease



* p<0.05 compared to NCI

Preclinical studies have demonstrated that breaking down CSPGs **improves Alzheimer's symptoms**[2,3]

Removing PTPσ **improves cognitive function** in Alzheimer's models[4]

NVG-291's multiple modes of action, **plasticity, axonal regeneration and remyelination** have the potential to benefit patients suffering from Alzheimer's

[1] Howell, M.D. et al., Acta Neuropathol Commun, 3, 54. (2015). [2] Yang et al., Experimental Neurology (2015).
[3] Vegh et al., Acta Neuropathologica Communications (2014). [4] Gu et al., BioRxiv (2016)

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NVG-291 Safety/Efficacy Studies in Alzheimer's Disease Patients

Alzheimer's Phase 1b/2a

~80 patients, ~$20 million estimated cost

- Multicenter, placebo controlled
- 3 months treatment duration
- Efficacy analysis includes functional and structural imaging, cognitive assessments and fluid biomarkers

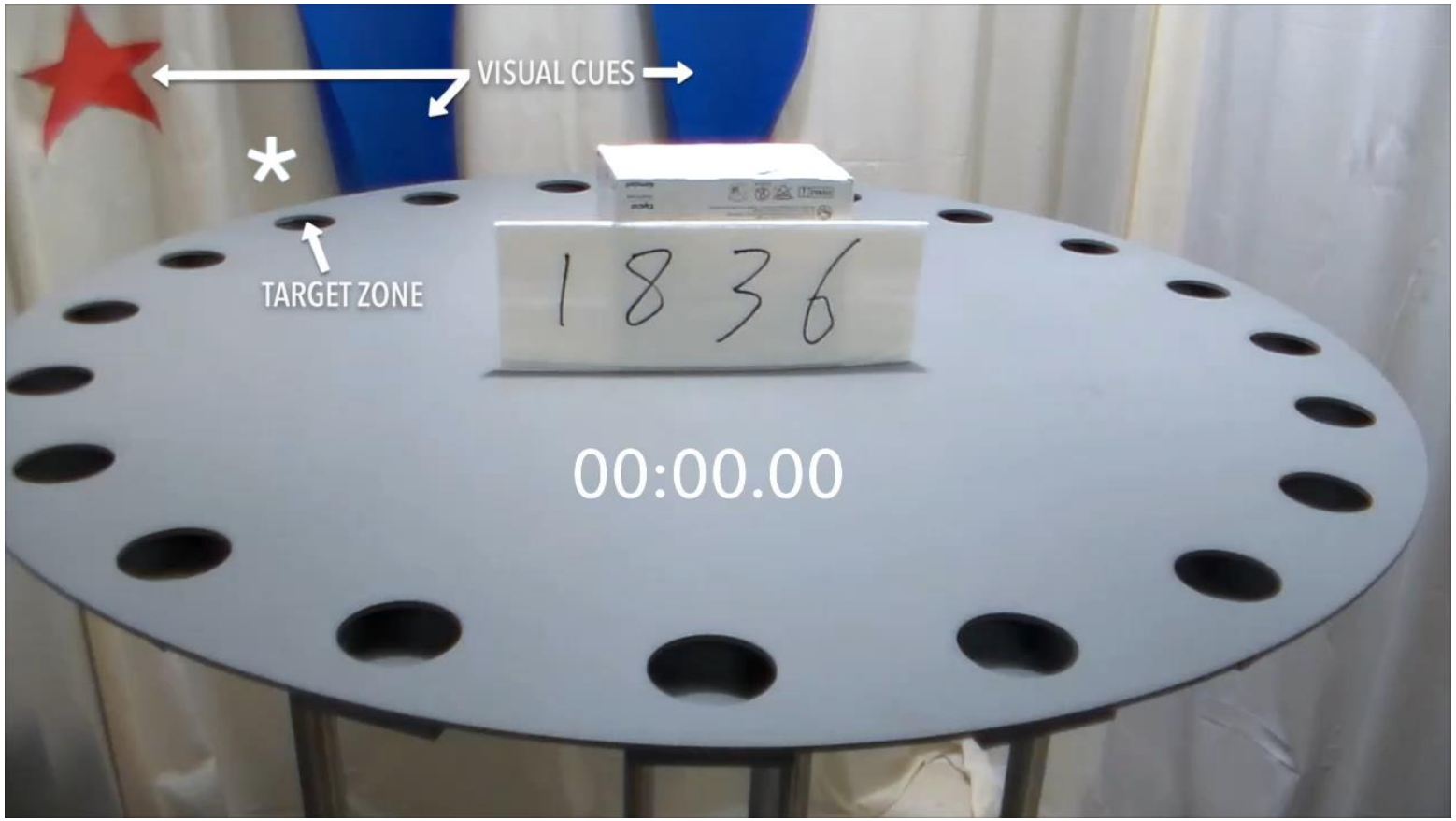
World-class Advisory Board with experts in research, clinical design, cognitive assessments and biomarkers

Jeffrey Cummings, MD, ScD University of Nevada	Originator, Neuropsychiatric Inventory (NPI)
Martin Farlow, MD Indiana University School of Medicine	Led/contributed to >230 clinical trials; authored 493 peer reviewed research papers and 509 abstracts
Bruce Lamb, PhD Indiana University School of Medicine	World-expert on biological underpinnings of Alzheimer's disease and related dementia
George Perry, PhD University of Texas, San Antonio	Current and founding Editor-in-Chief of the Journal of Alzheimer's Disease

Reisa Sperling, MD Harvard Medical School; Massachusetts General Hospital	Led NIA-Alzheimer's Assoc. guideline development group; Serves on National Institute on Aging Advisory Council
Michael Weiner, MD University of California, San Francisco	Leader in development of MRI and PET for investigating and diagnosing neurodegenerative diseases
Henrik Zetterberg, MD, PhD University of Gothenburg, University College London	World expert in blood-based biomarkers in neurological disorder

NVG-291-R – Improved Spatial Learning and Memory

STROKE MODEL



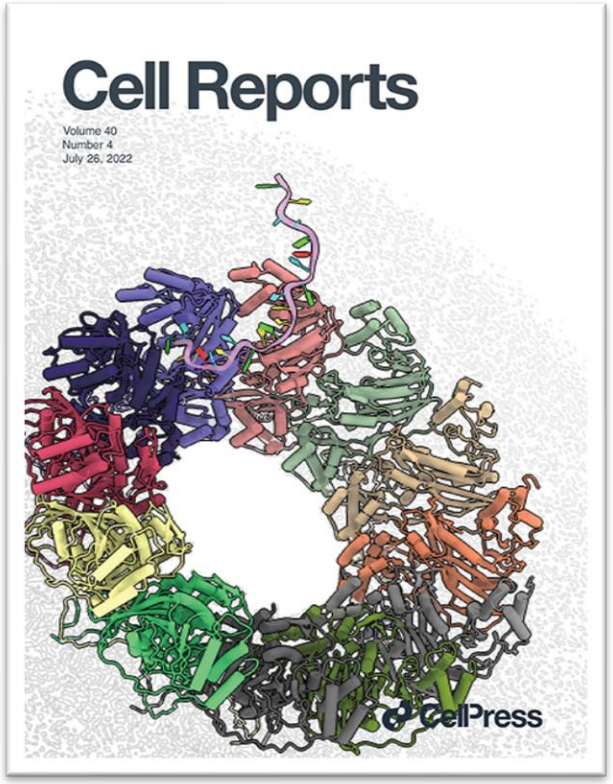
Significant improvement in cognitive function when treated 24 hours - and even *7 days* after stroke

Luo et al., Cell Reports Volume 40, Issue 4, 111137, July 26, 2022 (https://doi.org/10.1016/j.celrep.2022.111137)

NVG-291-R in Stroke – Breakthrough Results in a New Indication

CELL REPORTS – PEER-REVIEWED PUBLICATION

"… Small Canadian Biotech Could Challenge Roche's Hold in Stroke Treatment" – BioSpace July 2022



Pioneering preclinical study in the **peer-reviewed scientific journal** Cell Reports demonstrating NVG-291-R **promotes nervous system repair** and **significant functional recovery** in a mouse model of severe ischemic stroke

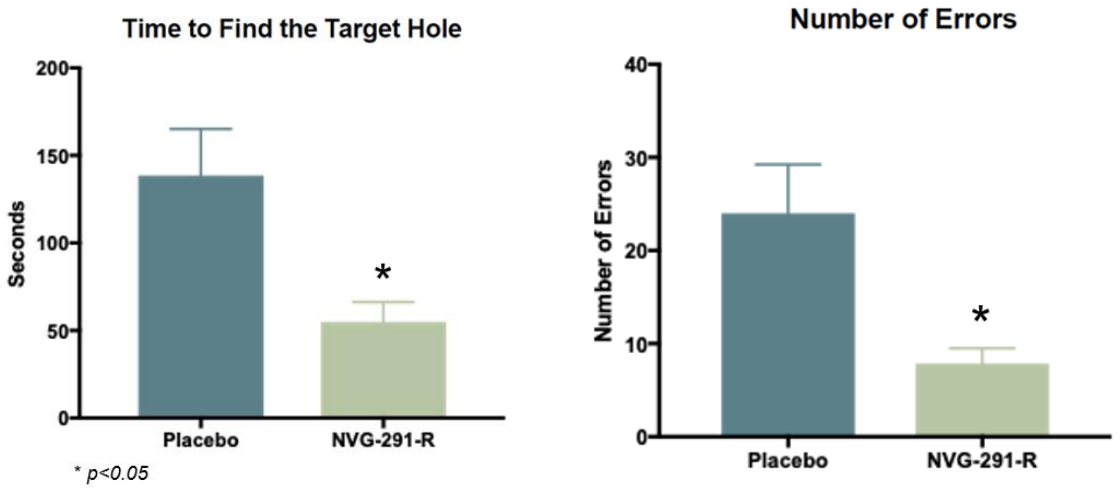
Significant functional repair from a stroke **7 days after onset** in **landmark preclinical study**

Dramatic and Unprecedented Recovery From a Stroke

Luo et al., Cell Reports Volume 40, Issue 4, 111137, July 26, 2022 (https://doi.org/10.1016/j.celrep.2022.111137)

Improved Spatial Learning and Memory

Barnes Maze Test
Treatment beginning 7 days post stroke



Animals treated with NVG-291-R made **fewer errors** and identified the target hole in a **faster time** compared to placebo treated animals

Significant improvements observed when NVG-291-R was administered **up to 7 days after** an ischemic stroke

Improvements in spatial learning and memory may be relevant for other indications affecting cognition, such as Alzheimer's disease

Luo et al., Cell Reports Volume 40, Issue 4, 111137, July 26, 2022 (https://doi.org/10.1016/j.celrep.2022.111137)

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Multiple Sclerosis *Repair*

No FDA Approved Drug that Improves Function

- MS is an autoimmune disease where the immune system attacks myelin in the central nervous system, and over time this results in increasing disability
- Approved disease-modifying drugs modulate the immune system, which can reduce relapses and slow disability progression, but **none** repair damage
- **NervGen's goal is to repair/remyelinate the damage from MS, thereby improving function**

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NVG-291 Restores Motor Function in Multiple Sclerosis

Representative of Placebo Group

Score never improves from 3.5

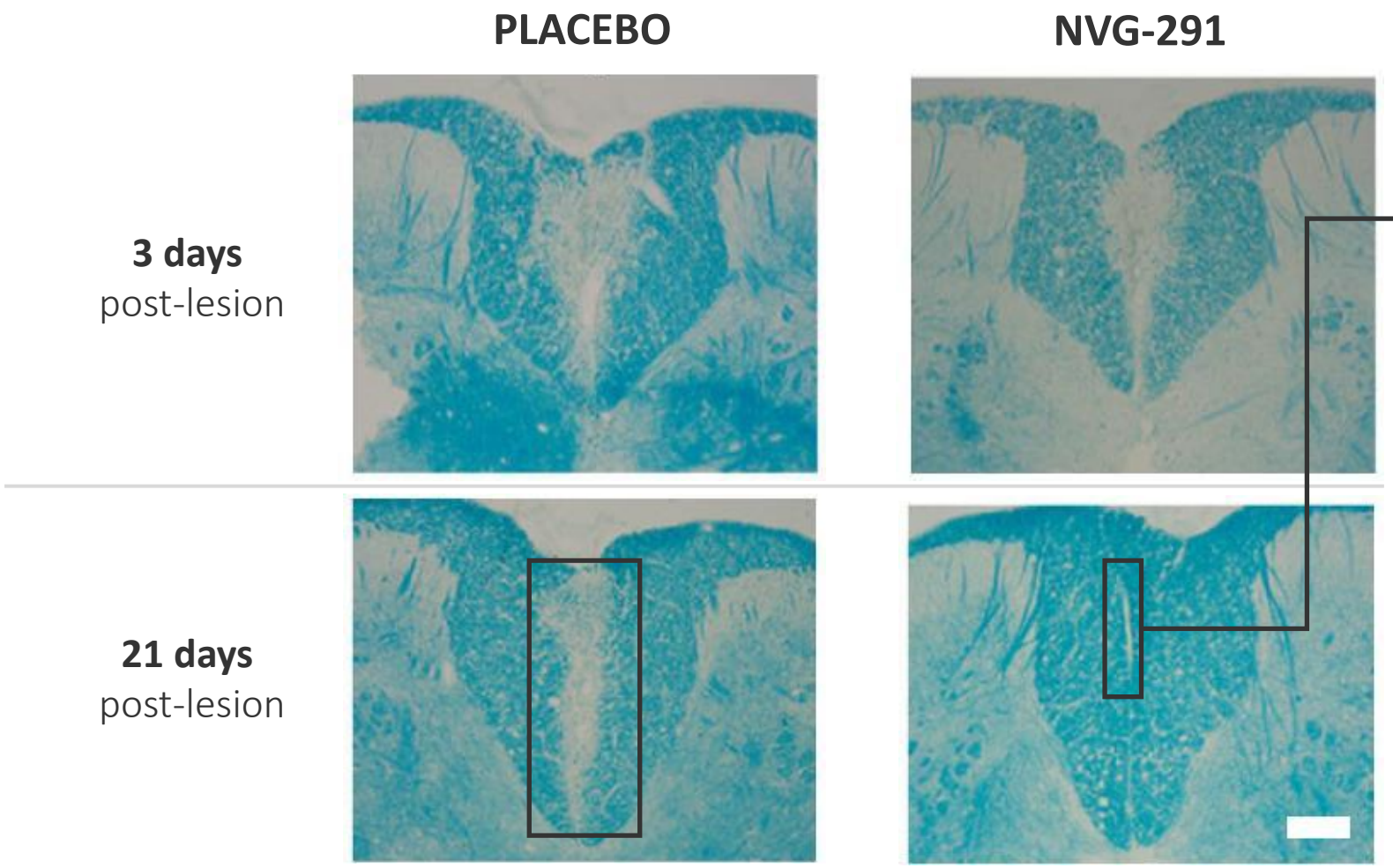
Representative of NVG-291 Group

Score improves to 0.5 in 20 days

NVG-291 restored motor function in MS model[1],
even when administered after symptoms were fully developed

[1]Luo, F. et al., Nature Communications 9, 1–16 (2018)

NVG-291 Remyelinates in Multiple Sclerosis



Lesion size in LPC demyelination model

POSITIVE PRECLINICAL RESULTS[1]

Animals treated with NVG-291 had substantially greater remyelination compared to placebo treated animals after 21 days

Histological evidence showed that the desired types of cells were migrating to the lesion, and that these cells were forming myelin

Increased remyelination was accompanied by improvements in nerve conduction

[1] Luo, F. et al., Nature Communications, 9, 1-16. (2018)

NervGen Pharma

NVG-291 Safety/Efficacy Studies in Multiple Sclerosis Patients

Multiple Sclerosis Phase 2

~80 patients, ~$20 million estimated costs

- Multicenter, placebo controlled
- 3 months treatment duration
- Efficacy analysis includes clinical assessments, advanced structural imaging and fluid biomarkers

World-class Advisory Board with experts in MS research, clinical design, and functional assessments

Jack Antel, MD McGill University	Ex-Pres., Americas Committee for Treatment and Research in MS; Ex- Pres., International Soc. of Neuroimmunology
Jeremy Chataway, MD University College London	Advanced Clinical trial design expert in MS
Jeffrey Cohen, MD Cleveland Clinic Lerner College of Medicine	Ex-ACTRIMS President
Robert Naismith, MD Washington University	Expert in clinical trial design and clinical outcomes measures
Anneke van der Walt, MD, PhD Monash University	Led several international studies on digital biomarkers in MS

Share and Capital Structure

Exchange/Market: Ticker	TSX: NGEN.V	OTCQX: NGENF
Recent Share Price (February 10, 2023)	CA $1.96	US $1.50
Shares Outstanding	59.0 million	
Fully Diluted	76.2 million (~7.3 million options, ~9.9 million warrants)	
Insider Ownership	24.4%	
~Cash & Cash Equivalents (September 30, 2022)	CA $27.7 million	US $20.2 million

NervGen Pharma

Key Upcoming Value Drivers

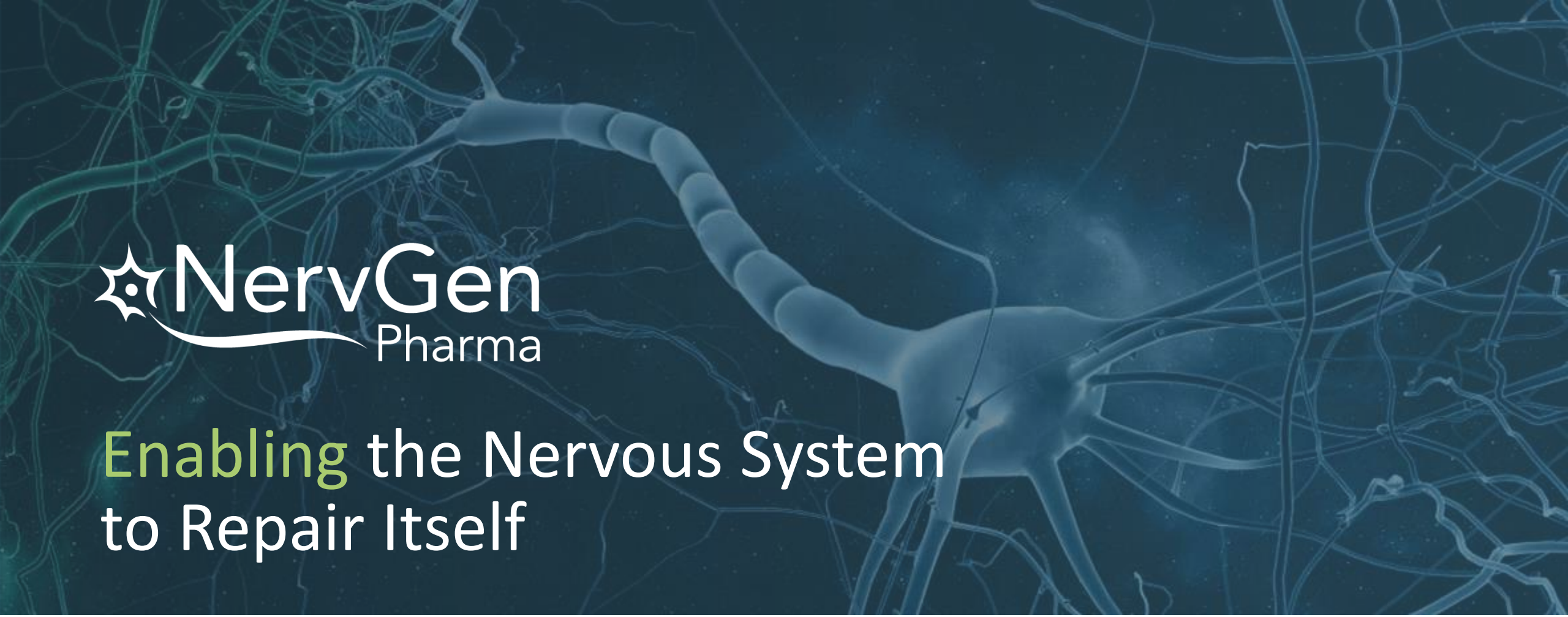
Phase 1b/2a spinal cord injury clinical trial **to be initiated**

Preclinical study **results in an Alzheimer's model**

Awarding of US Department of Defense and privately funded grants

New CEO

NervGen Pharma



NervGen Pharma

Enabling the Nervous System to Repair Itself

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