

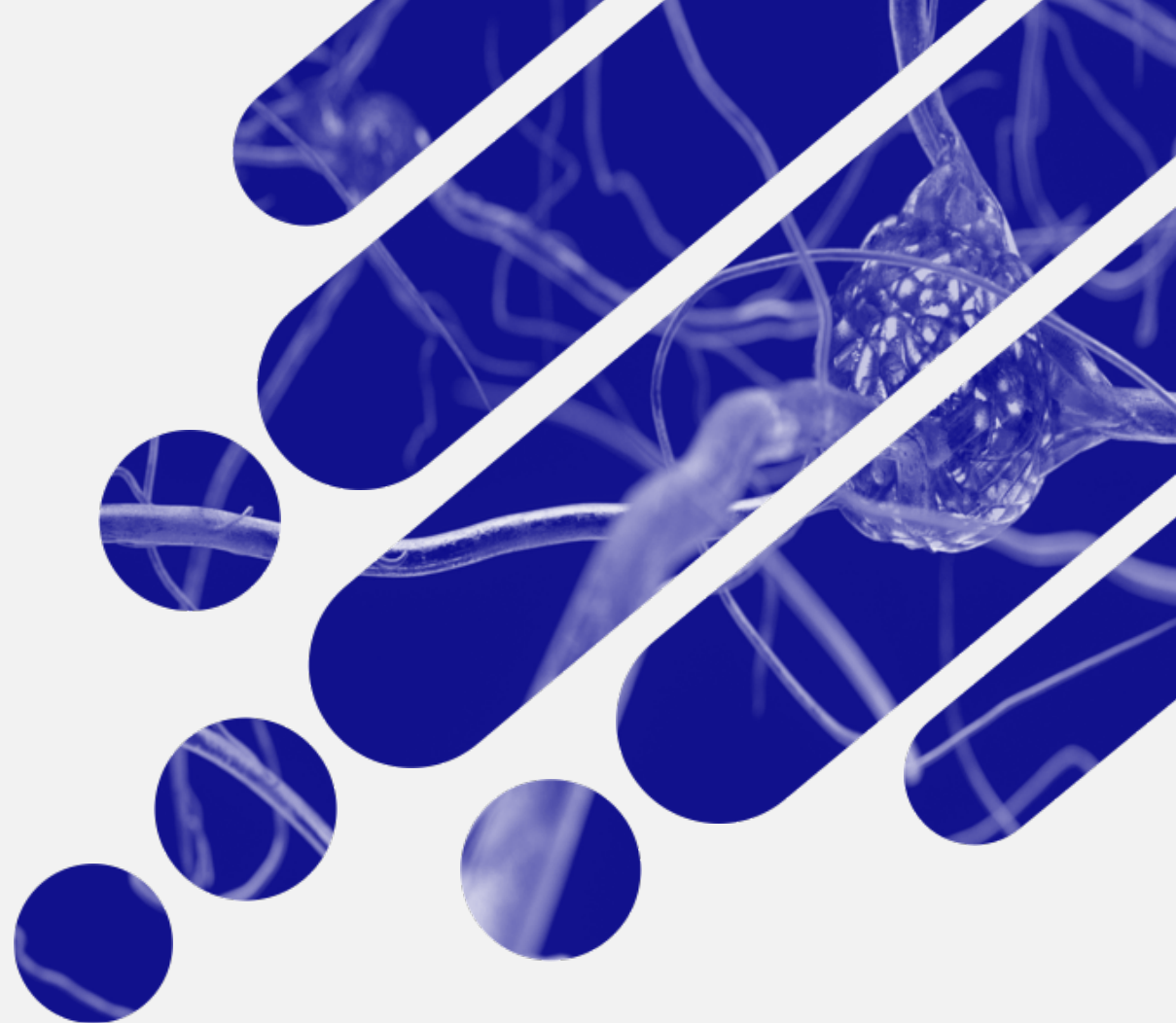


EPINEURON

Maximizing human potential after
nerve injury.

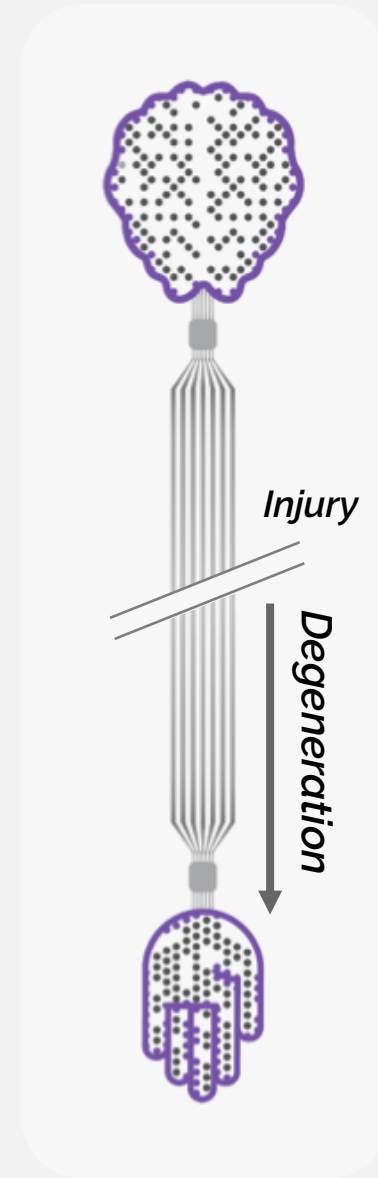
Synapse Life Science Consortium

April 2023



2
million

Peripheral nerve injuries in
North America annually





Only
surgery



Patients are often left
with devastating
consequences



No drugs or devices
to improve recovery

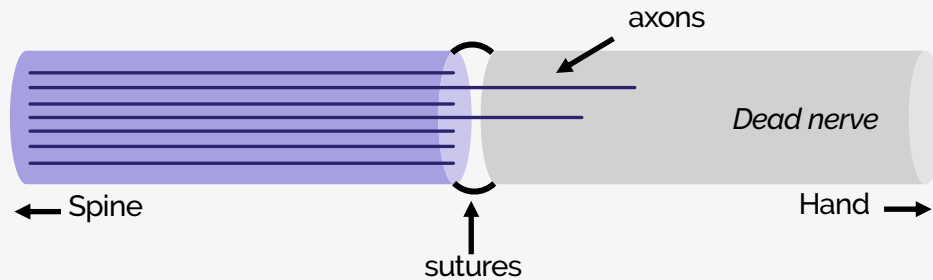
Nerve Regeneration



A **single 1-hour dose** of electrical stimulation delivered immediately after surgery to accelerate nerve regeneration (neuroregenerative therapy)

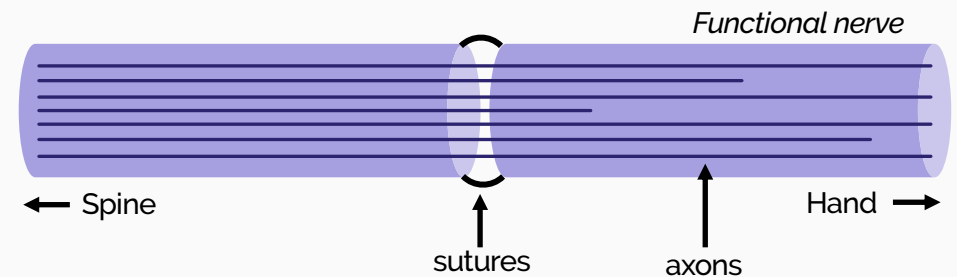
Only Surgery

Nerve laceration repair

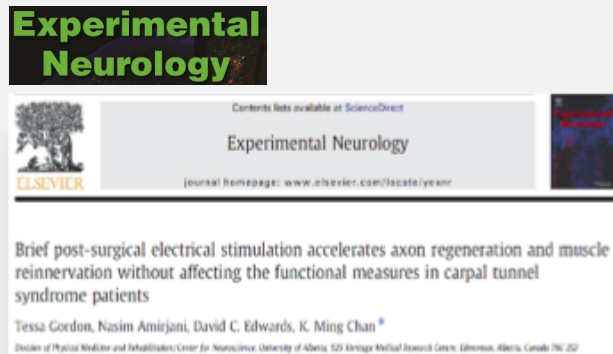


Surgery and Epineuron

Nerve laceration repair with bioelectronic therapy



Peer-Reviewed Publications



Experimental Neurology

Contents lists available at ScienceDirect

Experimental Neurology

Journal homepage: www.elsevier.com/locate/ynbex

Brief post-surgical electrical stimulation accelerates axon regeneration and muscle reinnervation without affecting the functional measures in carpal tunnel syndrome patients

Tessa Gordon, Nasim Amirjani, David C. Edwards, K. Ming Chan^{*}

Division of Physical Medicine and Rehabilitation, Center for Neuroscience, University of Alberta, 528 Heritage Medical Research Centre, Edmonton, Alberta, Canada T6G 2G2



Annals of Neurology

Electrical Stimulation Enhances Sensory Recovery: A Randomized Controlled Trial

Joshua N. Wong, MD, MSc,¹ Jaret L. Olson, MD, FRCS,¹
Michael J. Morhart, MD, MSc, FRCS,¹ and K. Ming Chan, MD, FRCP^{2,3}

Objective: Brief post-surgical electrical stimulation (ES) has been shown to enhance peripheral nerve regeneration in animal models following axotomy and crush injury. However, whether this treatment is beneficial in humans with sensory nerve injury has not been tested. The goal of this study was to test the hypothesis that ES would enhance sensory nerve regeneration following digital nerve transection compared to surgery alone.

Methods: Patients with complete digital nerve transection underwent epineurial nerve repair. After coaptation of the severed nerve ends, five wire electrodes were implanted before skin closure. Postoperatively, patients were random-



NEUROSURGERY
THE REGISTER OF THE NEUROSURGICAL MEMBERS

RESEARCH—HUMAN—CLINICAL TRIALS

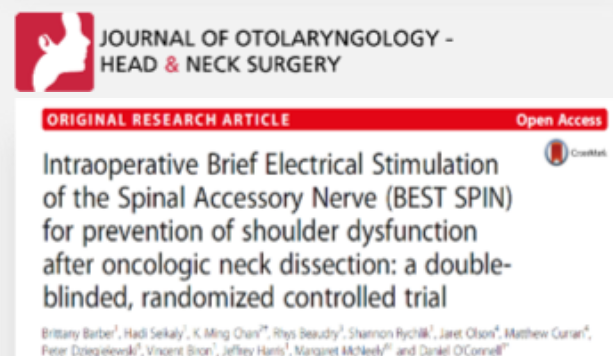
Postsurgical Electrical Stimulation Enhances Recovery Following Surgery for Severe Cubital Tunnel Syndrome: A Double-Blind Randomized Controlled Trial

Walter A. Prews, MD, FRCS¹
Michael J. Morhart, MD, MSc, FRCS¹
Jaret L. Olson, MD, FRCS¹
K. Ming Chan, MD, FRCP²

BACKGROUND: Patients with severe cubital tunnel syndrome often have poor functional recovery with conventional surgical treatment. Postsurgical electrical stimulation (PES) has been shown to enhance axonal regeneration in animal and human studies.

OBJECTIVE: To determine if PES following surgery for severe cubital tunnel syndrome would result in better outcomes compared to surgery alone.

METHODS: Patients with severe cubital tunnel syndrome in this randomized, double-



JOURNAL OF OTOLARYNGOLOGY - HEAD & NECK SURGERY

ORIGINAL RESEARCH ARTICLE **Open Access**

Intraoperative Brief Electrical Stimulation of the Spinal Accessory Nerve (BEST SPIN) for prevention of shoulder dysfunction after oncologic neck dissection: a double-blinded, randomized controlled trial

Brittany Barber¹, Hadi Sekaly¹, K. Ming Chan^{2*}, Rhys Beaudry³, Shannon Rychlik⁴, Jaret Olson⁵, Matthew Curran⁶, Peter Dziegielewska⁷, Vincent Bron⁸, Jeffrey Harris⁹, Margaret McKeely¹⁰ and Daniel O'Connell¹¹

Clinical efficacy summary from 4 human trials



Sensory

40% Increase in sensory recovery



Motor

50% Increase in motor connections



Time

30% earlier recovery

The Research Equipment



Grass SD9

Used for proof-of-concept to demonstrate clinical safety and efficacy of treatment in 4 RCT's led by our advisors.

- Not commercial for human-use
- Needs technician
- No standard nerve interfaces
- Dangerously over-powered



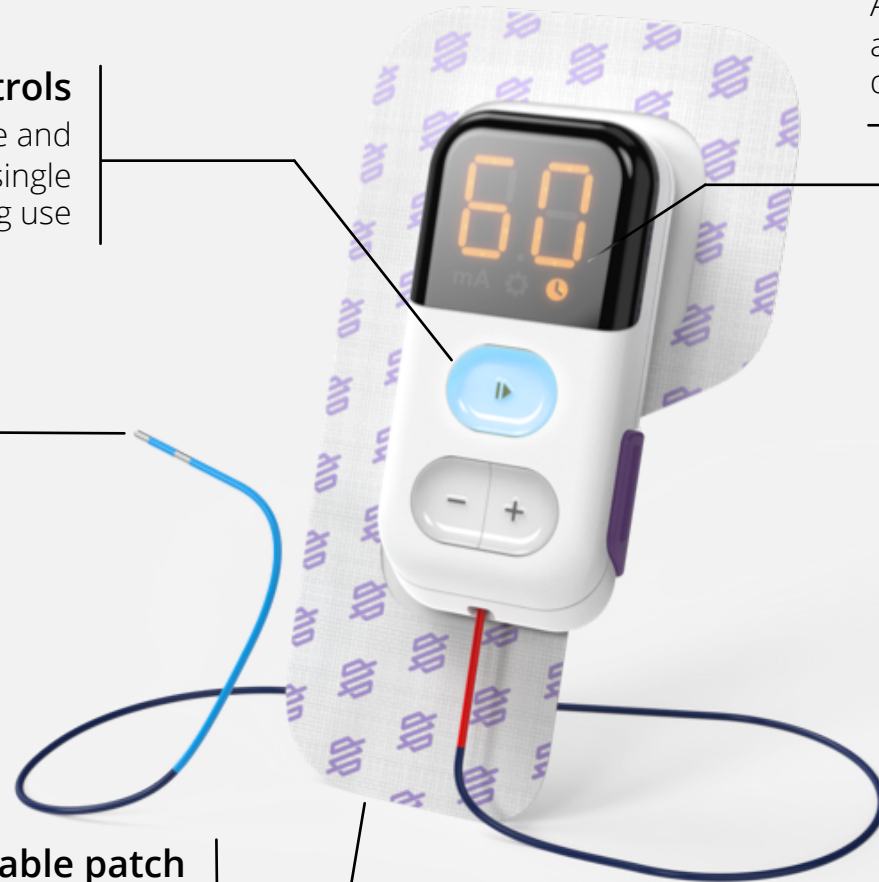
For **investigational use only** by qualified investigators

Controls
Adjust amplitude and patient comfort single handedly during use

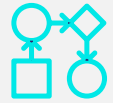
Bipolar tip
Shapable electrode delivers therapy directly to the injured nerve

Display
Amplitude, therapy time, and device settings are displayed

Wearable patch
Easily secure the system to the patient during transport and therapy

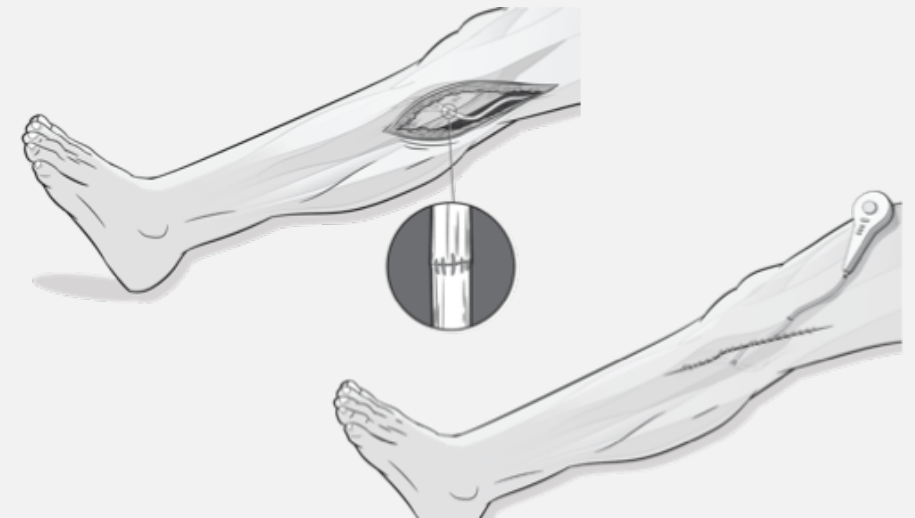


Broad Applications



Workflow

- 1 Intraoperative Setup**
At end of surgery – takes 2-3 minutes to set up
- 2 Postoperative Therapy**
1-hour therapy takes place in recovery room



Market Opportunity



Surgery

1+

million

Nerve repair procedures
annually



Market Opportunity

\$1.7

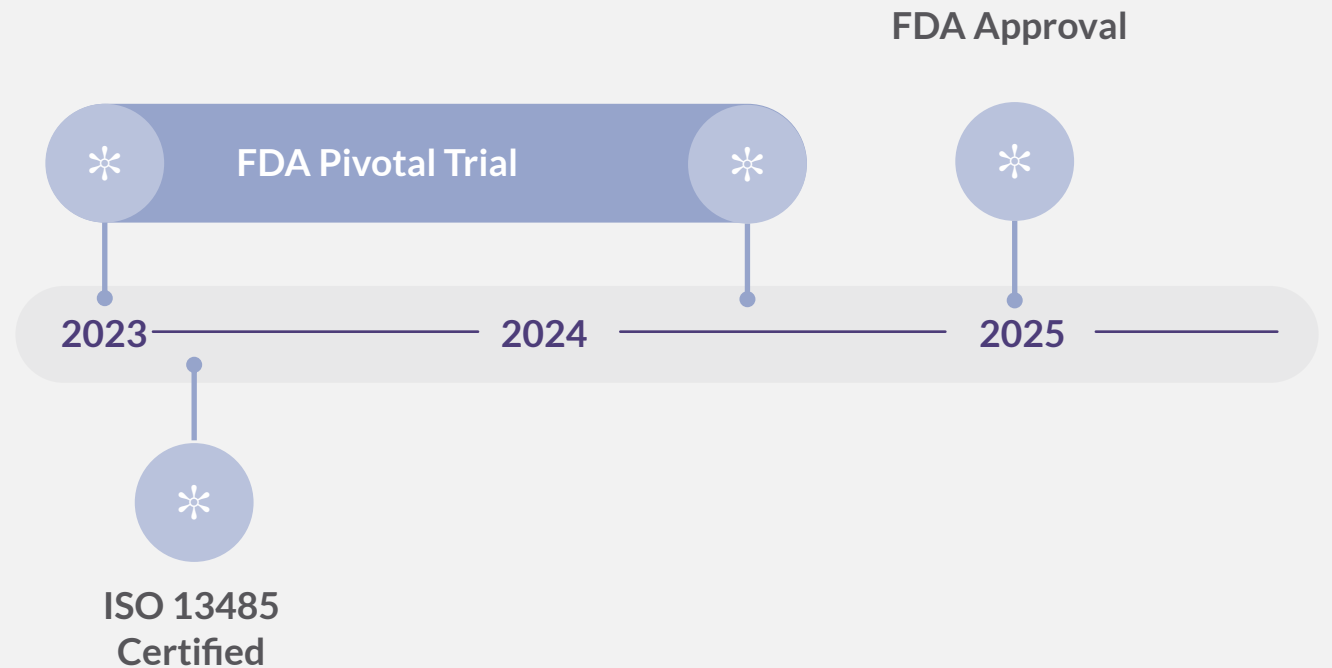
billion

US addressable
market

Path to Market



- ✓ FDA Breakthrough Device; Class II, De Novo with vetted pivotal protocol
- ✓ Completed FIH safety and usability
- ✓ Strong IP position with pipeline products
- ✓ Closed \$10M Series A





Ambitious Goals.

Driving our long term innovation strategy with projects in basic science, user research and clinical trials.



Clinical study in cubital tunnel syndrome



Human factor studies in live animals for clinical utility and usability.



Basic science research to further elucidate regenerative mechanisms and therapy.

Team



Baylis
MEDICAL



Boston
Scientific



Smith+Nephew



Leadership

Sergio Aguirre, MBA

CEO, Co-founder

Formerly OCE & CIMTEC

Mike Willand, PhD

CTO, Co-founder

Formerly McMaster University
& Hospital for Sick Children

Frank Baylis

Board Member

Co-founder, Chairman
Baylis Medical

Ing Goping

Board Member

Formerly CEO, CSO
Laborie Medical

Commercialization Advisors

Anthony Arnold

Corporate Strategy

Formerly CEO
SetPoint Medical

Tracy Cameron, PhD

Clinical & Regulatory

Formerly CSO Neuromod.
St. Jude Medical

David Robinson

Operations

Formerly COO
Saluda Medical

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Regulatory

Formerly Branch Chief
FDA, CDRH

Clinical and Scientific Advisors

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Hospital for Sick Children

Ming Chan, MD

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Alberta Health Sciences

James Bain, MD

Plastic Surgeon

McMaster University

Jovy Angeles, MD

Orthopedic Surgeon

U Chicago Medicine