NEURAL INTERFACE MEDTECH · PRE-SEED ROUND

Your Mind, Encrypted. Your World, Connected.

> PCYLINK is building an injection-delivered, self-assembling nanostructure mesh that captures high-fidelity neural signals, encrypts them at the source, and routes motor intent wirelessly to external devices — restoring communication and control for patients with severe motor impairment, without open-skull surgery.

Raising a $2.0M Pre-Seed Round to complete nanomaterial synthesis, benchtop validation, and in vitro proof-of-concept in 18 months. Founder: **Kean A. Morton**.

$2.0M PRE-SEED | CLINICAL-FIRST | SOURCE ENCRYPTION | NEURASENSE DEMO LIVE

PROBLEM · THREE FAILURE POINTS

The Problem

Healthcare systems and payers waste over $10 billion annually managing severe paralysis across 300,000+ U.S. patients through high-risk $150,000+ open craniotomies and prolonged intensive care complications.

01 FAILURE POINT

Extreme Surgical Risk

Traditional BCIs require drilling through the skull (craniotomy), with significant risk of infection, chronic inflammation, and scar-tissue buildup.

→ Solved by **Minimally Invasive Delivery**

02 FAILURE POINT

Prohibitive Healthcare Cost

Open-skull neurosurgery costs hospital systems and payers over $150,000 per procedure, limiting accessibility to only extreme edge cases.

→ Solved by **Cost-Effective Outpatient Economics**

03 FAILURE POINT

Unprotected Neural Data

Most neural recording systems prioritize signal over security, leaving raw neural data exposed to privacy risks and potential attack vectors.

→ Solved by **Hardware-Grade Source Encryption**

The result: neural interfaces stay confined to a small number of specialized centers — out of reach for most of the patients who need them.

SOLUTION · ONE ANSWER PER FAILURE POINT

The Solution

PCYLINK delivers high-fidelity brain-computer interfacing through a minimally invasive, non-craniotomy delivery system with hardware-grade source encryption.

01 SOLVES 01

Minimally Invasive Delivery

Replaces open-skull surgery with a targeted micro-injection, drastically reducing infection risk, tissue trauma, and patient recovery time.

← Answers **Extreme Surgical Risk**

02 SOLVES 02

Cost-Effective Outpatient Economics

Lowers procedure complexity and hospital stay times, cutting overall delivery costs by more than 60% compared to traditional craniotomies.

← Answers **Prohibitive Healthcare Cost**

03 SOLVES 03

Hardware-Grade Source Encryption

Encrypts neural signals at the biological interface before transmission, designed to prevent unauthorized interception.

← Answers **Unprotected Neural Data**

One platform, three answers: injection delivery, outpatient economics, and encryption at the source — built for the severe motor impairment beachhead.

CRITICAL PATH · THREE STEPS

How It Works

PCYLINK captures high-fidelity neural signals through a minimally invasive interface, encrypting and routing data directly to external systems without open-skull surgery.

1 Minimally Invasive Injection

THE DELIVERY

- Delivered via a standard systemic or targeted micro-injection, completely bypassing surgical craniotomy and vascular catheterization.
- Formulated with biocompatible, self-assembling nanoscale materials engineered to cross the targeted barrier and interface directly with local neural tissue.

2 In Situ Mesh Formation & Energy Harvesting

THE INTERFACE

- Once localized, the nanoscale elements assemble into a flexible, conductive micro-mesh that integrates seamlessly across neural cellular architecture without mechanical tissue damage.
- The system utilizes integrated bio-electrochemical energy harvesting (bio-battery architecture), utilizing surrounding biological substrates to power the telemetry network internally.

3 Signal Acquisition & Encrypted Transmission

THE TELEMETRY

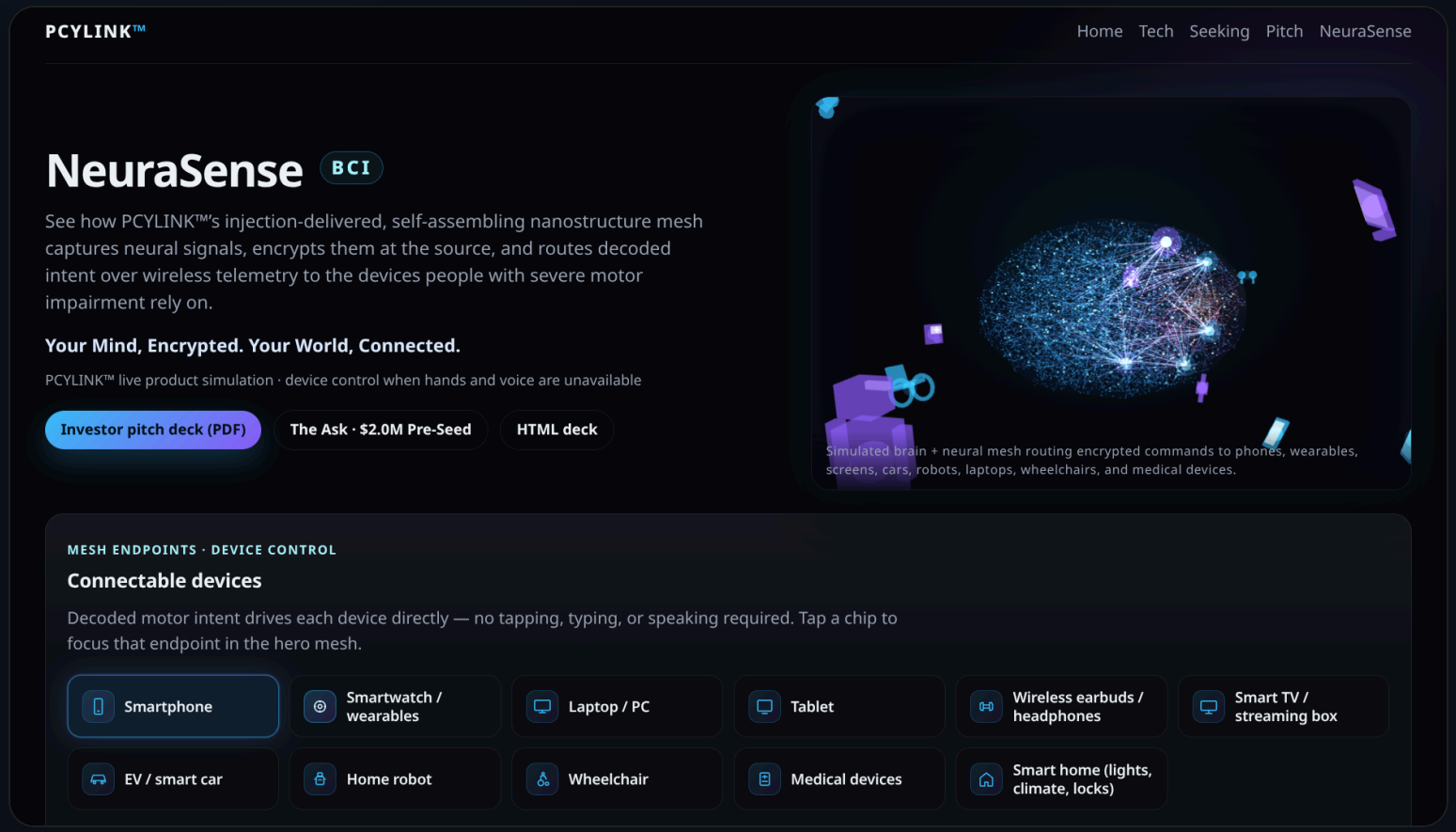
- The assembled mesh records micro-volt neural potentials and encrypts the raw signal directly at the biological source.
- Data transmits wirelessly to external paired hardware, enabling high-fidelity digital and physical device control.

THE CLINICAL OUTCOME:

Patients regain lost physical agency and high-speed digital control through an outpatient-style intervention that bypasses the severe risks of invasive brain surgery.

LIVE PRODUCT SIMULATION

NeuraSense — See the Neural Mesh in Action



OPEN NOW

pcylink.com/neurasense

An interactive simulation of the PCYLINK platform: a neural mesh decoding intent and routing encrypted commands to personal, mobility, and medical devices.

- **Device control** — phones, laptops, wheelchairs, vehicles, robots, and medical devices
- **Assistive focus** — control when hands or voice are unavailable
- **Secure sessions** — each connection encrypted before commands reach a device
- **Tap to focus** — select a device to highlight its link in the mesh

WHY IT MATTERS

A live product surface investors and clinicians can explore today, ahead of preclinical data.

SAFETY · SECURITY · PRECLINICAL PLAN

Safety & Security by Design

01 · CLINICAL SAFETY

Minimally invasive, biocompatible

- **No open craniotomy** — a targeted micro-injection reduces surgical trauma, scarring, and recovery time.
- **Flexible mesh** — biocompatible, self-assembling nanomaterial with chronic tissue-response mitigation built into the design.
- **Defined benchmarks** — biocompatibility and signal-capture criteria set before in vivo work begins.

02 · NEURAL DATA SECURITY

Encrypted at the biological source

- **Encrypted at capture** — proprietary telemetry protocols encrypt neural data before it leaves the body.
- **Fresh keys every session** — AES-256 plus Neural-Ephemeral Key Exchange (NEKE) gives each connection its own key.
- **Patient-owned, isolated** — data treated as the patient's asset; wireless functions separated from core biological functions.

01
PRE-SEED · PHASE 1
Bench fabrication
Micro-mesh prototypes and delivery mechanics.

02
PRE-SEED · PHASE 2
Biocompatibility
In vitro testing against defined benchmarks.

03
NEXT ROUND
In vivo validation
Non-primate studies of delivery and signal capture.

04
NEXT ROUND
FDA Q-Submission
Lock the regulatory path toward an IDE.

Differentiator: no implant competitor publishes an end-to-end neural-data encryption design. Utility patent filings on the encryption architecture are a Pre-Seed milestone.

MARKET · CURRENT DRAIN → BEACHHEAD → EXPANSION

Market Opportunity

PCYLINK converts a $10B annual healthcare drain into a $15B clinical beachhead, expanding into a $38B global neurotechnology market by 2032.

01 · THE BEACHHEAD

Redirecting Current Spend

$10B	300,000	$15B	$900M
Annual SCI + ALS care drain	U.S. patients eligible for motor restoration	U.S. clinical beachhead	Recurring procedure market / year

- **The Current Drain:** $10B per year spent on lifelong care, hospitalization and complications for SCI and ALS patients.
- **PCYLINK Opportunity ($15B beachhead):** 300,000 patients in the U.S. eligible for motor restoration × $50,000 procedure price (substantially lower than a $150k open craniotomy).
- **Annual Incident Flow:** 18,000 new severe neurological trauma and ALS cases annually represent an immediate $900M/year recurring procedure market.

02 · THE EXPANSION

Global Neurotechnology

$38B Global TAM by 2032

- **Total Addressable Market (TAM):** $38 Billion global neurotechnology market by 2032, spanning neurostimulation, neurosensing, neuroprostheses and neurorehabilitation.
- **The Catalyst:** Today that $38B market is bottlenecked by open-skull surgery risk. By eliminating craniotomy, PCYLINK expands patient candidacy and unlocks outpatient adoption across regional surgical centers.

$10B annual SCI + ALS care drain (Slide 2) → **$15B** U.S. clinical beachhead → **$38B** global neurotechnology TAM by 2032

 Sources: NSCISC Facts & Figures 2024 (~305,000 living with SCI; ~18,000 new SCI/yr; annual costs by severity); CDC National ALS Registry (~33,000 living with ALS); Precedence Research, Neurotechnology Market (Dec 2022: $38.17B by 2032).

COMPETITION · HEAD-TO-HEAD

Competitive Landscape

PCYLINK eliminates the surgical trauma of Neuralink and the channel-count limits of Synchron by utilizing injectable nanomaterials with hardware-grade encryption.

CAPABILITY	NEURALINK	SYNCHRON	PCYLINK ADVANTAGE (TARGET)
Surgical Invasiveness & Delivery	**Highly invasive.** Requires a craniectomy (a coin-sized section of skull removed) and robotic insertion of penetrating electrode threads into the cortex.	**Moderately invasive.** Endovascular catheter delivery via the jugular vein (stent-based), plus a subcutaneous chest pocket for the telemetry unit.	**Minimally invasive targeted injection.** Zero surgical bone removal, zero vascular catheterization.
Signal Density & Cellular Integration	**High channel count** (1,024 electrodes on flexible threads), but penetrating electrodes provoke a tissue response; thread retraction cut effective electrodes in the first patient.	**Lower channel density (16 electrodes),** restricted to recording from within large blood vessels outside the actual parenchyma.	**Distributed nanoscale mesh.** Self-assembles directly at the neural cellular level, enabling high-resolution capture without rigid tissue displacement.
Long-Term Biocompatibility & Power	**Small rechargeable battery** inside the skull-mounted implant; requires routine inductive recharging through the scalp.	**No implanted battery;** chest-implanted telemetry unit depends on an external inductive power unit worn over it.	**In situ biochemical energy harvesting.** Powered by native biological substrates, eliminating bulky battery hardware and chronic tissue-strain.
Architecture & Data Security	**On-implant spike detection** and compression, then Bluetooth to an external app for decoding.	**Raw signals** relayed over a custom RF link from the chest unit; decoding happens off-body.	**Hardware-grade source encryption.** Telemetry is encrypted directly at the biological interface, protecting neural privacy at the origin.

Neither publishes an end-to-end neural-data encryption design.

STATUS · TECHNICAL VALIDATION

Current Status & Technical Validation

PCYLINK has completed in silico computational modeling and IP groundwork, positioning the company to transition directly into wet-lab bench synthesis.

01 · IN SILICO PHASE

De-Risking Milestones Completed (In Silico Phase)

Computational Biophysics & Modeling

Completed theoretical simulations modeling nanomaterial self-assembly dynamics, molecular transport, and baseline electrical conductivity in simulated neural environments.

Biochemical Energy Harvesting Thesis

Modeled in situ bio-electrochemical power generation to calculate power draw and thermal dissipation limits for the internal network.

Intellectual Property Foundation

Filed core trademarks (PCYLINK™) and drafted provisional patent claims covering injectable self-assembling neural interfaces and bio-source encryption.

Preclinical Trial Protocol

Designed comprehensive in vitro and non-primate in vivo testing protocols alongside clear FDA pre-submission milestones.

02 · PRE-SEED CAPITAL DEPLOYMENT

The Next Horizon (Pre-Seed Capital Deployment)

CURRENT STAGE — NOW

In Silico (Simulation & Theoretical Architecture).

$2.0M PRE-SEED · 18 MONTHS

FUNDED STAGE · PRE-SEED — THIS ROUND

In Vitro (Physical Nanomaterial Synthesis and Bench Biocompatibility Testing).

$8M–$10M INSTITUTIONAL ROUND

NEXT STAGE · INSTITUTIONAL SEED — NEXT

In Vivo & FDA Q-Sub (Animal Model Signal Capture and FDA Pre-Submission).

TEAM · LEADERSHIP & HIRING PLAN

Team & Scientific Architecture

PCYLINK is led by proprietary systems architecture and supported by an immediate roadmap to seat world-class neuroengineering and clinical leadership.

01 · FOUNDER

Core Leadership

Kean Morton

FOUNDER & SYSTEMS ARCHITECT

Lead architect of PCYLINK neural networking protocols, encrypted brain-computer interface architecture, and proprietary signal transmission thesis. Spearheading initial IP filing, investor formation, and technical development roadmap. Directed PCYLINK's in silico simulation and modeling program.

02 · PRE-SEED TEAM & LAB

Pre-Seed Team & Lab Partnerships (Funded This Round)

Principal Materials Scientist — PRE-SEED HIRE

Leads nanomaterial formulation, characterization, and electrical conductivity verification for the self-assembling mesh.

Electrophysiology Researcher — PRE-SEED HIRE

Dedicated to baseline bio-electrical signal transmission testing on benchtop neural tissue cultures.

Sponsored University Lab — LAB PARTNERSHIP

Sponsored wet-lab access for nanomaterial synthesis and in vitro cell-culture biocompatibility assays.

Next Round (Institutional Seed) — NEXT ROUND

Chief Scientific Officer / Lead Neurobiologist · VP of Biomaterials & Neural Engineering · Lead Regulatory & FDA Strategist, for in vivo validation and the FDA pathway.

COMMERCIALIZATION · PRICING

Go-to-Market & Commercial Model

PCYLINK enters the market via established neurotechnology reimbursement pathways, monetizing through high-margin medical device sales and hospital procurement.

01 · PATHWAY

Commercialization Pathway

1. **Clinical Beachhead**
   Focus strictly on severe motor impairment and paralysis restoration, pursuing FDA Breakthrough Device designation and expedited review pathways.

2. **Payer Reimbursement (CPT / DRG)**
   Modeled after proven neuromodulation billing pathways (such as Deep Brain Stimulation and spinal cord stimulation), covered by Medicare and private insurers.

3. **Procurement Target**
   Tier 1 neurosurgical centers and specialized rehabilitation hospitals that already purchase and deploy implantable neural hardware.

02 · ECONOMICS

Unit Economics & Pricing Model

$45K–$65K	Sub-$3K	90%+
Target price per unit	Target COGS at scale	Hardware gross margin

- **Target Procedure Price:** $45,000 to $65,000 per unit (benchmarked against traditional invasive neuromodulation implants).
- **Target Device COGS:** Sub-$3,000 at scaled production, driving 90%+ gross margins on hardware.
- **Secondary Revenue Stream (Phase 2):** Secure neural telemetry and API software licensing fees for specialized assistive robotics and external interface hardware.

FINANCIALS · CAPITALIZATION

Financial Model & Capitalization Roadmap

~$28M CUMULATIVE CAPITAL THROUGH FIRST REVENUE

PCYLINK requires ~$28M in cumulative capital through first commercial revenue, across three development phases, to reach FDA PMA approval via the Breakthrough pathway and scale to $20M in commercial procedure revenue by Year 5.

01 · OPERATING PLAN

5-Year Operating & Capital Plan

YEAR · PHASE	OPERATING BURN	REVENUE	FOCUS
Year 1 Pre-Seed Phase THIS ROUND	**$2.0M**	$0	Nanomaterial formulation, in vitro benchtop biocompatibility, and utility patent portfolio.
Year 2 Institutional Seed Phase	**$6.0M**	$0	Non-primate in vivo animal models, signal-to-noise optimization, and FDA Q-Submission / IDE filing.
Year 3 Series A / Clinical Trials	**$10.0M**	$0	First-in-human feasibility safety study (10–15 patients) and IDE trial execution.
Year 4 Early Commercialization	**$10.0M**	**$3.0M**	FDA PMA approval (Breakthrough pathway), early access programs across 3 pilot neurosurgical centers (60 injections @ $50k).
Year 5 Scaled Commercial Adoption	**$12.0M**	**$20.0M**	Expanded commercial rollout across 20 Tier-1 hospital networks (400 injections @ $50k, 88% gross margins). Reaches operating profitability in Year 5.
Years 1–4	**$28.0M**	**$3.0M**	Cumulative operating burn through first commercial revenue ($2.0M + $6.0M + $10.0M + $10.0M).

02 · ASSUMPTIONS

Key Financial Assumptions

PROCEDURE ASP

$50,000

Blended price per implant system, reimbursed via established neurotechnology pathways.

TARGET COGS

$6,000 per unit

At early production, driving 88% gross margin.

CUMULATIVE CAPITAL THROUGH FIRST COMMERCIAL REVENUE

~$28M

Across Pre-Seed, Seed, and Series A rounds (Years 1–4 operating burn).

OPERATING PROFITABILITY

Year 5

Reaches operating profitability in Year 5.

PRE-SEED ROUND · USE OF FUNDS

The Ask & Milestones

$2.0M PRE-SEED ROUND
18-MONTH HORIZON

PCYLINK is raising a $2.0M Pre-Seed Round to complete physical nanomaterial synthesis, benchtop validation, and initial in vitro proof-of-concept over 18 months.

01 · USE OF FUNDS

Allocation of Funds ($2,000,000)

$1.0M — Wet-Lab Synthesis & Benchtop R&D 50%

Nanomaterial formulation, characterization, electrical conductivity verification, and in vitro cell-culture biocompatibility assays.

$600K — Core Scientific Team & Lab Partnerships 30%

Sponsored university lab access, principal materials scientist, and dedicated electrophysiology researcher.

$400K — IP Portfolio & Regulatory Architecture 20%

Formal conversion of provisional patents to PCT/utility filings, and initial regulatory engagement strategy.

02 · MILESTONES

Milestones Unlocked (Pre-Seed Horizon)

MILESTONE 1 **Physical Nanomaterial Synthesis**
Confirmed in vitro self-assembly of conductive nanostructures in simulated bio-environments.

MILESTONE 2 **Bench Biocompatibility**
Validated non-toxicity and baseline bio-electrical signal transmission on benchtop neural tissue cultures.

MILESTONE 3 **Utility Patent Portfolio**
Filed utility patent applications covering the injectable self-assembling mesh and biochemical energy harvesting.

MILESTONE 4 **Institutional Seed / Series A De-Risking**
Direct biological proof in hand, unlocking an institutional $8M–$10M round for in vivo animal models and FDA engagement.

JOIN THE $2.0M PRE-SEED ROUND

Your Mind, Encrypted. Your World, Connected.

$2.0M Pre-Seed · In vitro proof-of-concept · Utility patents · 18 months

Partner with PCYLINK to bring minimally invasive, encrypted neural interfaces to patients with severe motor impairment.

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