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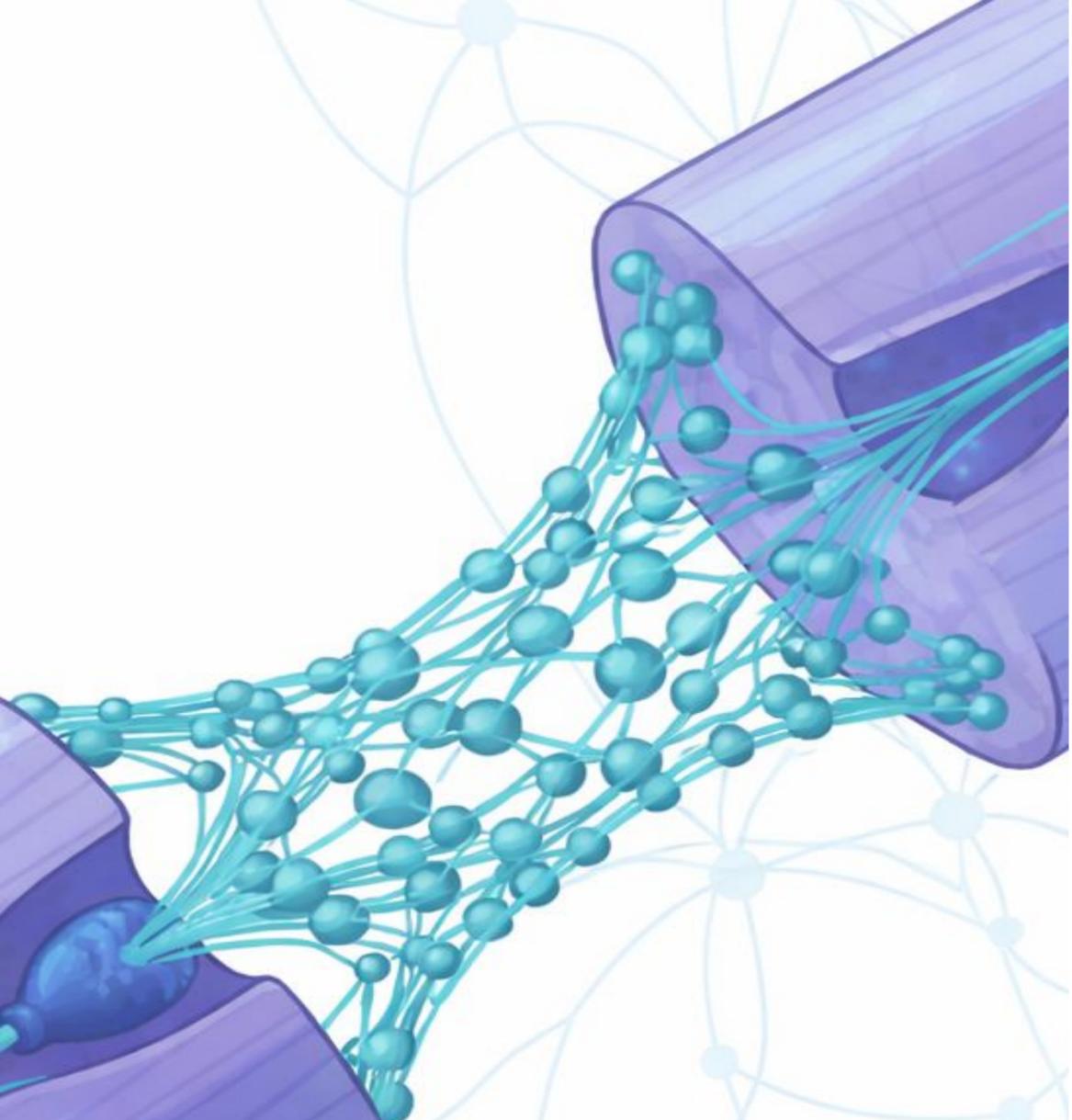
Rebuilding the Spinal Cord

First in Human in early 2027

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ADVANCED THERAPIES WEEK
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Non-Confidential

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Vision / Company purpose

Our purpose is to restore lost neurological function by rebuilding the injured spinal cord using personalized autologous neural tissue.

Unmet Clinical Need
A Permanent Injury With No Restorative Treatment

- Chronic complete SCI leads to lifelong paralysis

- No approved therapy restores lost neural tissue

- Even modest functional gains improved independence and reduce long-term cost

There is no restorative standard of care.
We are developing the first.

Spinal Cord Injury: U.S. Market and Economic Burden

Large economic burden, reimbursement supported by cost offset & gain in QALY

Economic Burden In the U.S.

310,000
people living with SCI in the U.S.

Up to **$6M**
life-time cost per patient

$30B
spent annually

32%
complete Paraplegia & Tetraplegia

50%
of total cost is attendant care and personal assistance

65%
of chronic SCI costs are long-term care

Value of Motor Improvement & One-Time Treatment

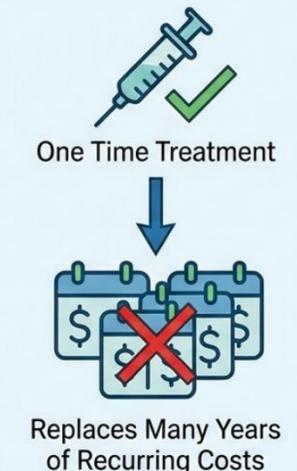**Small Motor Improvement = Reduced Lifetime Costs**

Small Motor Improvement

Reduced Lifetime Care Costs

More Independence = Better QoL & Less Healthcare Use

Improves Quality of Life

Reduces Healthcare Use

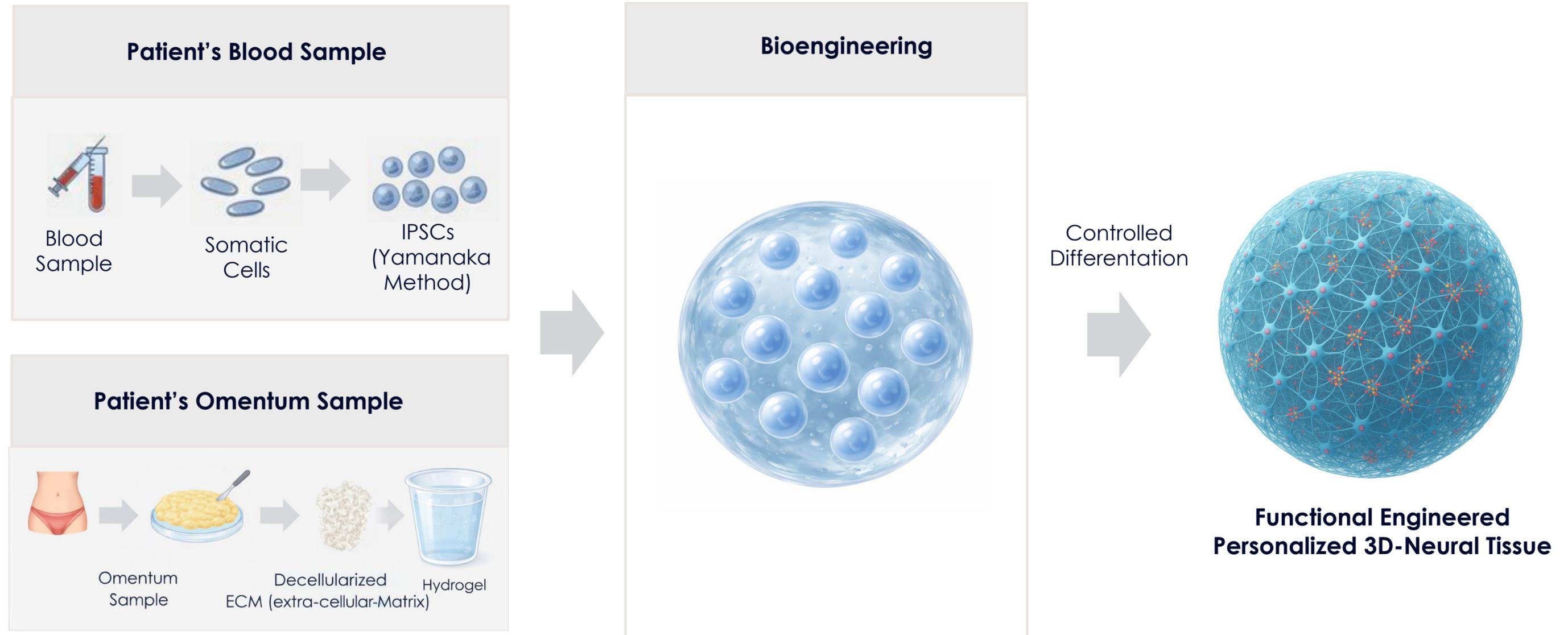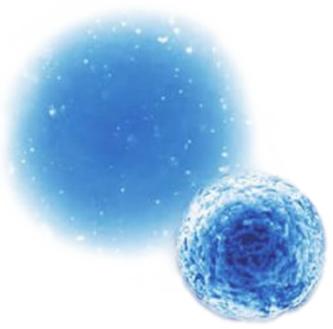**One-Time Treatment = Replaces Recurring Costs**

One Time Treatment

Replaces Many Years of Recurring Costs

High economic burden creates a strong reimbursement rationale

How It Works:
Engineering Patient-Specific Neural Tissue.

Patient's Blood Sample

Blood Sample → Somatic Cells → IPSCs (Yamanaka Method)

Patient's Omentum Sample

Omentum Sample → Decellularized ECM (extra-cellular-Matrix) → Hydrogel

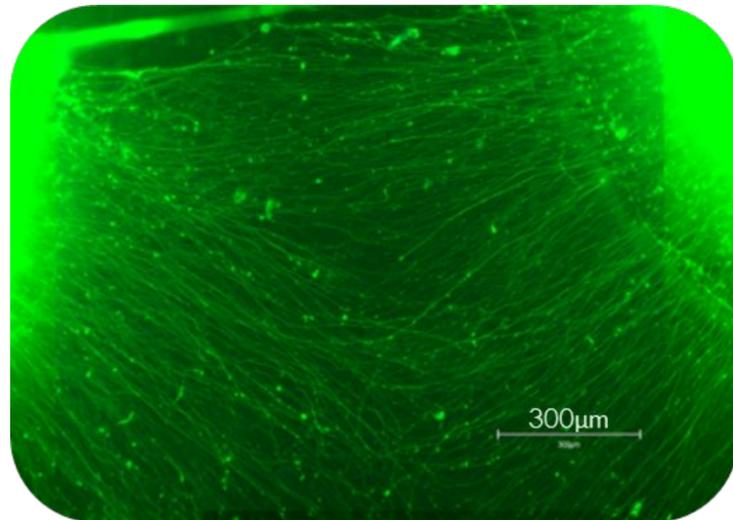**Bioengineering**

Controlled Differentation

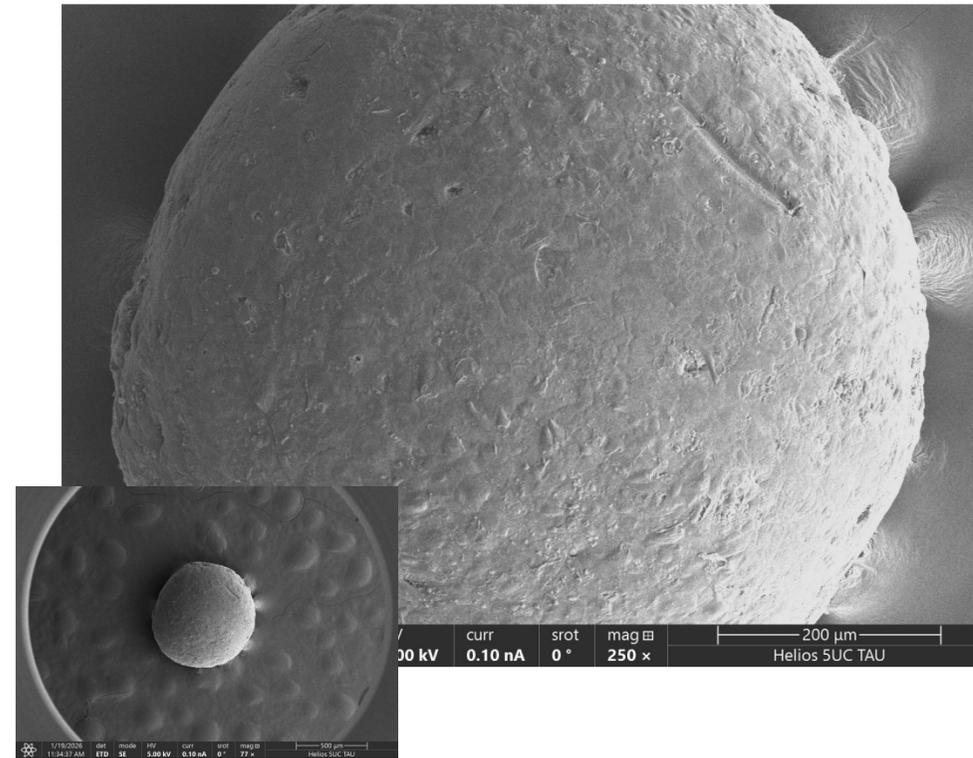**Functional Engineered Personalized 3D-Neural Tissue**

Designed to biologically integrate.
Autologous approach reduces immunogenicity.
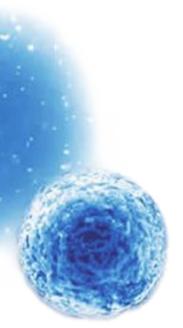
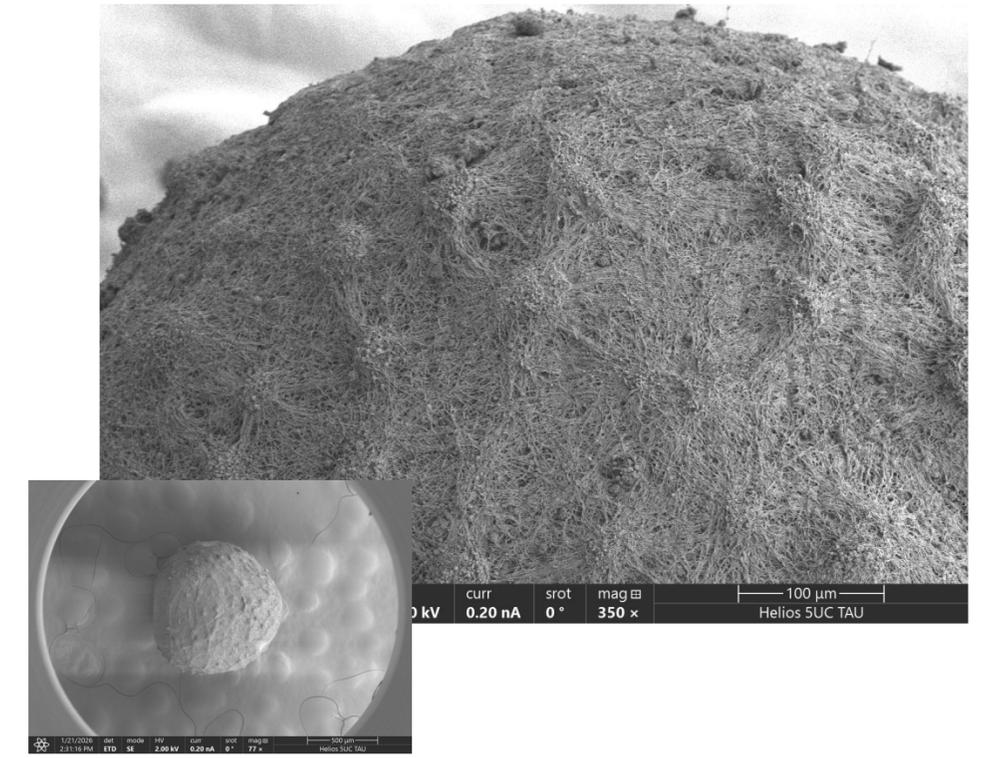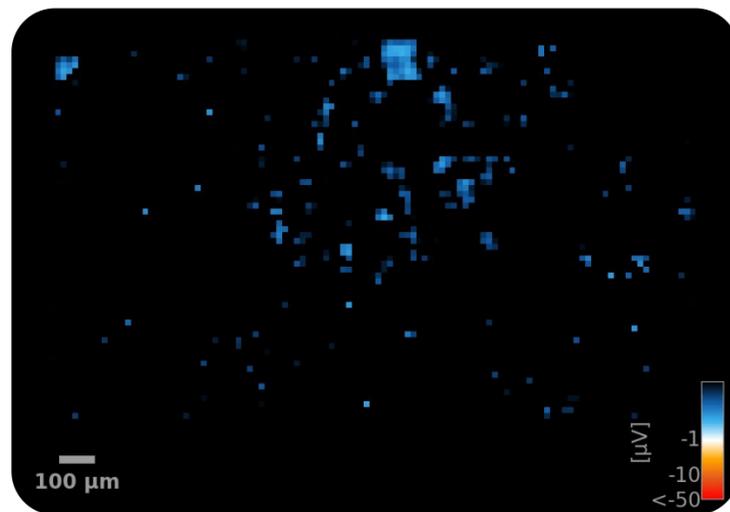# From patient iPSCs to 3D functional engineered neural tissue

Tuj1

Day 1
- Early-stage neural spheroid embedded in ECM
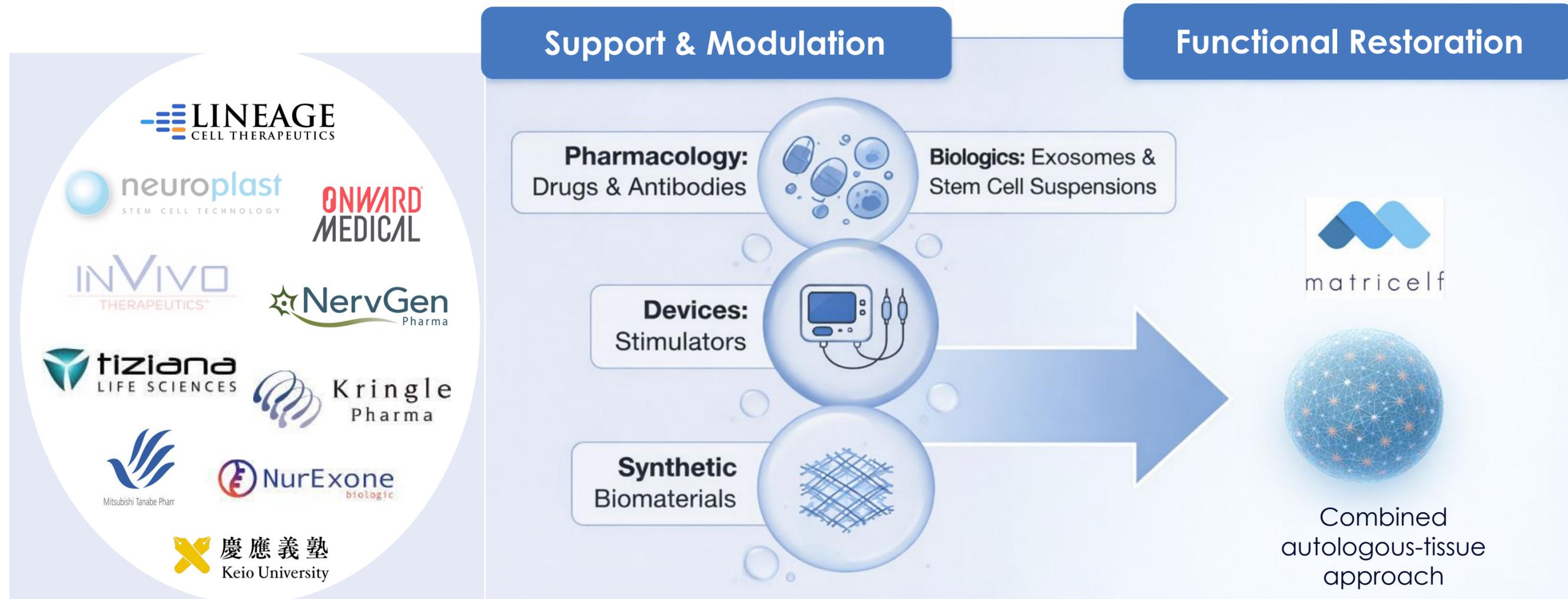- Smooth surface with limited microstructural complexity

Day 28
- Mature compact 3D neural tissue embedded in ECM
- Dense network of neuronal processes throughout the matrix

A scalable manufacturing process that converts a patient blood sample into a transplantable 3D neural tissue construct

Matricelf Advantage: From Modulation to Restoration
Redefining the SCI Landscape

Support & Modulation

Functional Restoration

LINEAGE CELL THERAPEUTICS

neuroplast STEM CELL TECHNOLOGY

ONWARD MEDICAL

inVivo THERAPEUTICS

NervGen Pharma

tiziana LIFE SCIENCES

Kringle Pharma

Mitsubishi Tanabe Pharr

NurExone biologic

慶應義塾 Keio University

Pharmacology: Drugs & Antibodies

Biologics: Exosomes & Stem Cell Suspensions

Devices: Stimulators

Synthetic Biomaterials
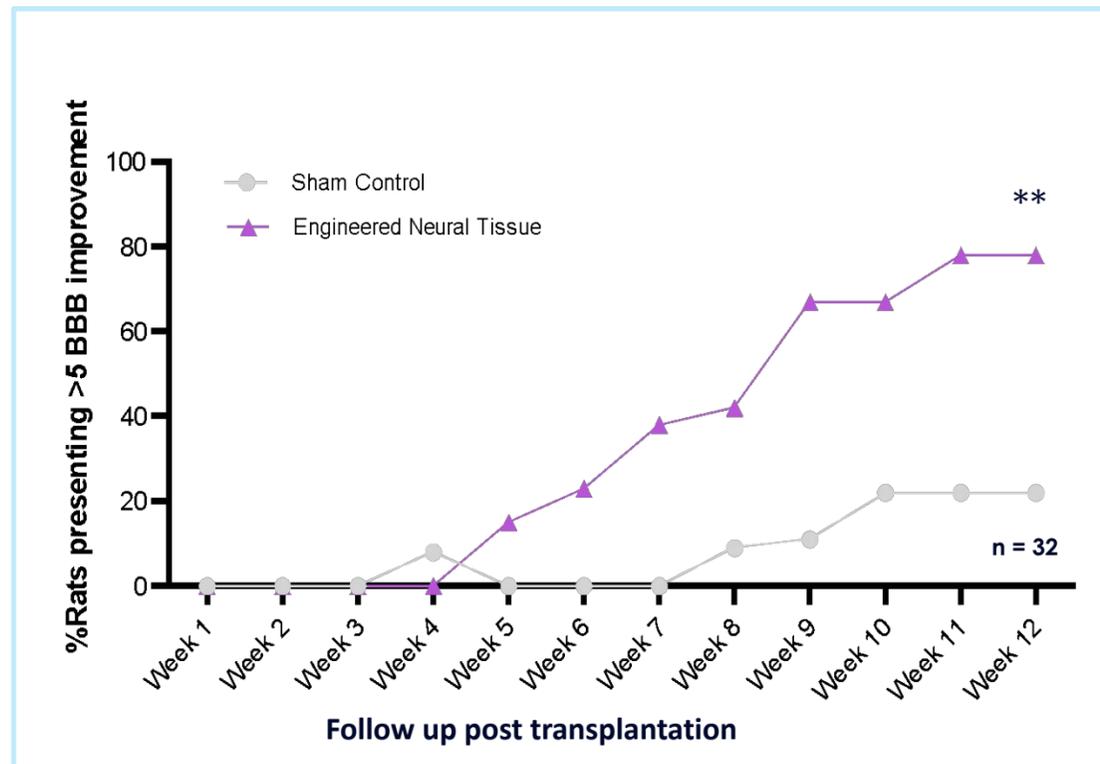
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Combined autologous-tissue approach

Most competitors modulate injury response.
Matricelf restores tissue function.

Robust Recovery in Chronic, Severe SCI
Pre-IND Feedback

Pilot **efficacy** study: **Chronic**[1] spinal cord injury nude rat model (T10 contusion)

% of BBB improvement (>5 pts)

Sham Control
Engineered Neural Tissue

**

n = 32

Follow up post transplantation

- **Clear efficacy** versus control

- **Meaningful recovery** benchmark: more than 5 BBB point improvement

- **High responder rate:** about 80% responders at week 12 versus about 20% control

- **Durable benefit** sustained across 12 week follow up

(**) A 5-point improvement signifies functional recovery

[1] Transplantation performed 4-weeks post injury

- Strong translational signal supporting First-In-Human as a near term value catalyst

- The BBB score measures motor function recovery in rats after spinal cord injury, ranging from 0 (no movement) to 21 (normal movement), providing an assessment of treatment effectiveness
- 0 to 7 Severe impairment; 8 to 13 Intermediate recovery; 14 to 20 Advanced recovery; 21 Normal locomotion

Robust Recovery in Chronic, Severe SCI Rat Model

CatWalk XT gait analysis shows coordinated limb use and posture.

Pre-treatment, Paralysed Rat
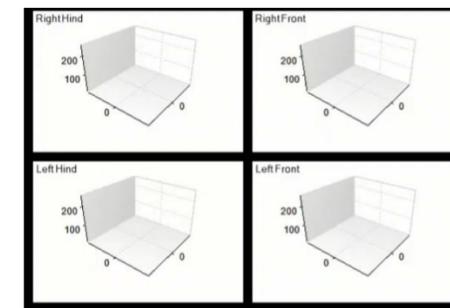
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Paw contact measurments
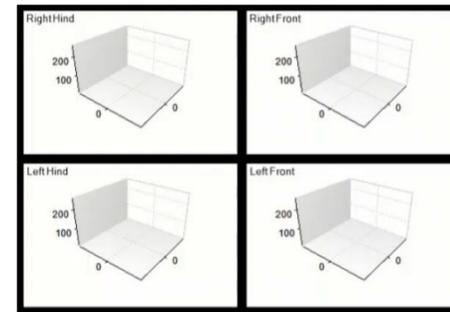
- Hind limbs show limited movement
- No measurable paw contact from rear limbs
- Hind paws drag behind front limbs
- Clear indication of **paralysis and loss of coordinated gait**

Post-treatment, With Matricelf

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- All four limbs regain coordinated movement
- Measurable paw contact from all limbs
- Restored coordinated gait pattern
- Evidence of **functional recovery** approaching **normal mobility**

Treated rats regained **coordinated movement & motor function**
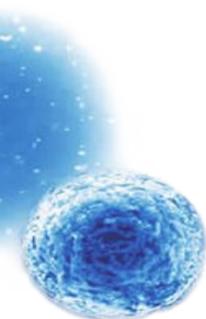
Journey to Recovery: Rebuilding the Spinal Cord

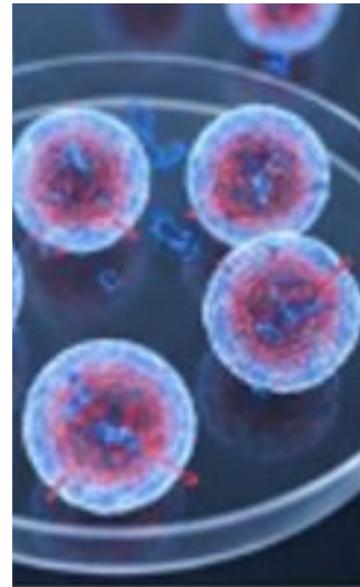

Traumatic Spinal Cord Injury (*)

Disrupted nerve pathways, complete injury

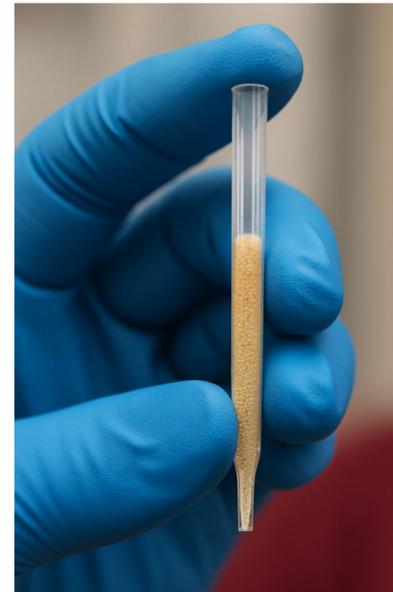**Patient's Blood & Omentum sample**

Performed after stabilization of impairment
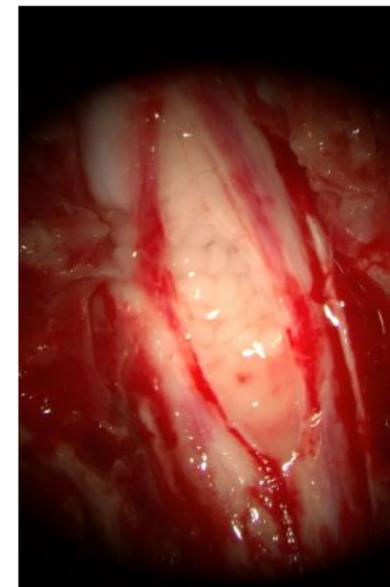
Production

Engineering functional autologous neural tissue spheres

Standard Spine Surgery Techniques

No novel surgical instrumentation required

Cavity is filled with neural tissue spheres

Neural repair & Regeneration (*)
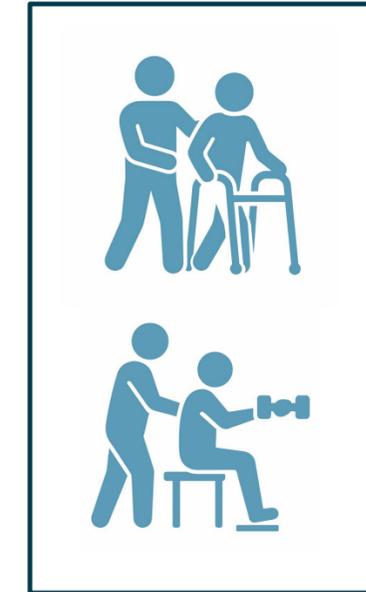
Rehabilitation

Restored neural signaling with potential functional improvement

Clinical Timeline

3-9 months from injury → ~6 month production → Surgery at 9-18 months from injury → for 1-3 months post surgery

Patient Enrollment — Tissue Engineering — Implantation — Rehabilitation
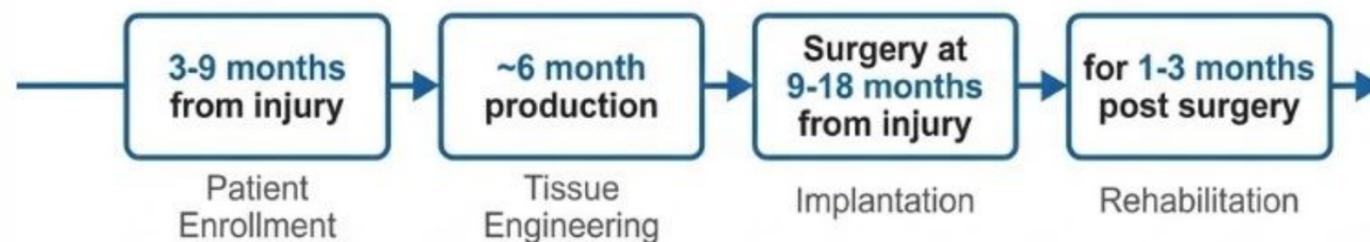
Single implantation, no repeated dosing

* Images are provided for demonstration purposes only

Strategic Roadmap 2026-2029

Integrated Plan | Multiple Inflection Points | Sustainable Value Creation

Primary Value Inflection

Phase I/II

	2026		FIH	Interim Data readout (3-4 patients)	Interim Data readout (5-8 patients)	Complete Phase I/II
Clinical	Clinical Operation Set-up (IRBs, Protocol, Patient Enrollment)		FIH	Interim Data readout (3-4 patients)	Interim Data readout (5-8 patients)	Complete Phase I/II
Regulatory		Israeli MoH submission	FDA - IND submission	RMAT Designation		Breakthrough Designation
CMC	GMP tech transfer		Optimizing Production			
Pre Clinical	IND enabling studies Safety & Efficacy					
Financing	$8m – $10m	Nasdaq	~$30m		Partnering inflection point	~$50m

Q1 Q2 Q3 Q4 **2026** Q1 Q2 Q3 Q4 **2027** **2028** **2029**

Funding Ask

This round funds First-in-Human and interim data readout, unlocking the next valuation step

Raise & Structure

Seeking: $8-$10m USD

Structure: PIPE for Accredited investors

Pricing: 30-days avg. share prise + warrant coverage.

Current Standing

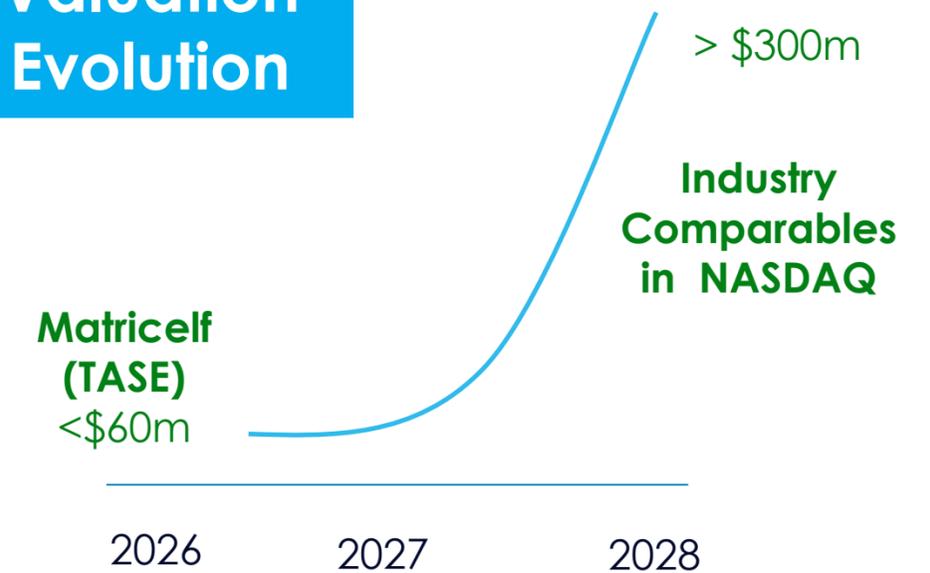**Market Cap**: ~$60m USD (Jan. '26)

Share Price: ~$2.00 USD

Runway: through Q1/2027

Use of Proceeds

- CMC & Manufacturing Scale Up

- Clinical & Regulatory execution for Phase I/II

- Public market readiness
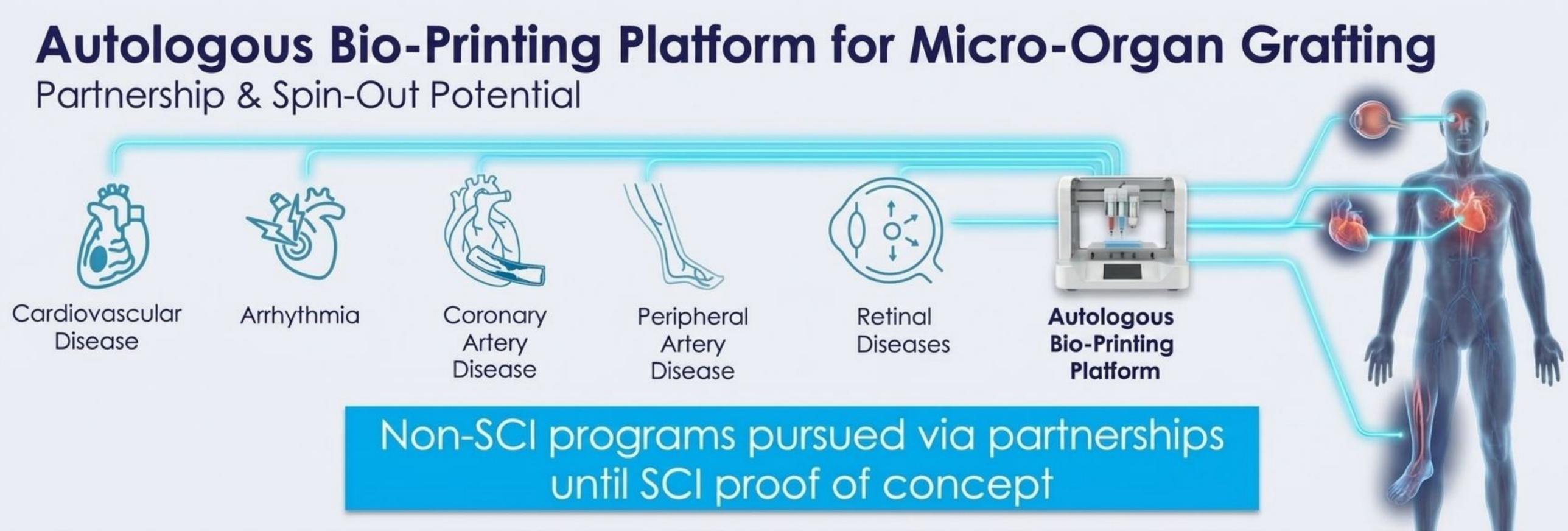
Expected Near-Term Valuation Evolution

> $300m

Industry Comparables in NASDAQ

Matricelf (TASE) <$60m

2026   2027   2028

Capital deployed to achieve First in Human data, ahead of an expected step up in valuation

Platform Potential Beyond SCI

SCI an anchoring indication, but technology modularity supports scale-out to other neurological injury disorders

Platform		Tissue	Indication	Discovery	Preclinical	Clinical
Micro-tissue	Engineered Autologous tissues	Motor Neurons	**SCI** (Spinal Cord Injury)		**IND enabling studies**	**2027**
		Cortical Neurons	**TBI** (Traumatic Brain Injury)	**In-vivo**		
		Cortical Neurons	**Stroke**	**In-vivo**		

Autologous Bio-Printing Platform for Micro-Organ Grafting
Partnership & Spin-Out Potential

Cardiovascular Disease · Arrhythmia · Coronary Artery Disease · Peripheral Artery Disease · Retinal Diseases · Autologous Bio-Printing Platform

Non-SCI programs pursued via partnerships until SCI proof of concept

Why Matricelf?

A first-in-class approach to spinal cord functional restoration with near-term human validation

Category defining approach

We create an **autologous engineered neural tissue** implant. Replacing damaged spinal cord tissue, not only modulating the injury.

De risked by PoC Chronic SCI model

Strong **functional recovery and a clean safety** profile In FDA accepted SCI animal models

Near term value catalysts

Advancing to **First in Human implantation** followed by interim readouts.

Near term First in Human milestone in a $30B+ high unmet need market

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Thank you

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