



matrixcell  
Regenerating the future of medicine

# Autologous neural implants for Spinal Cord Injury (SCI)





(credit: NY Times)

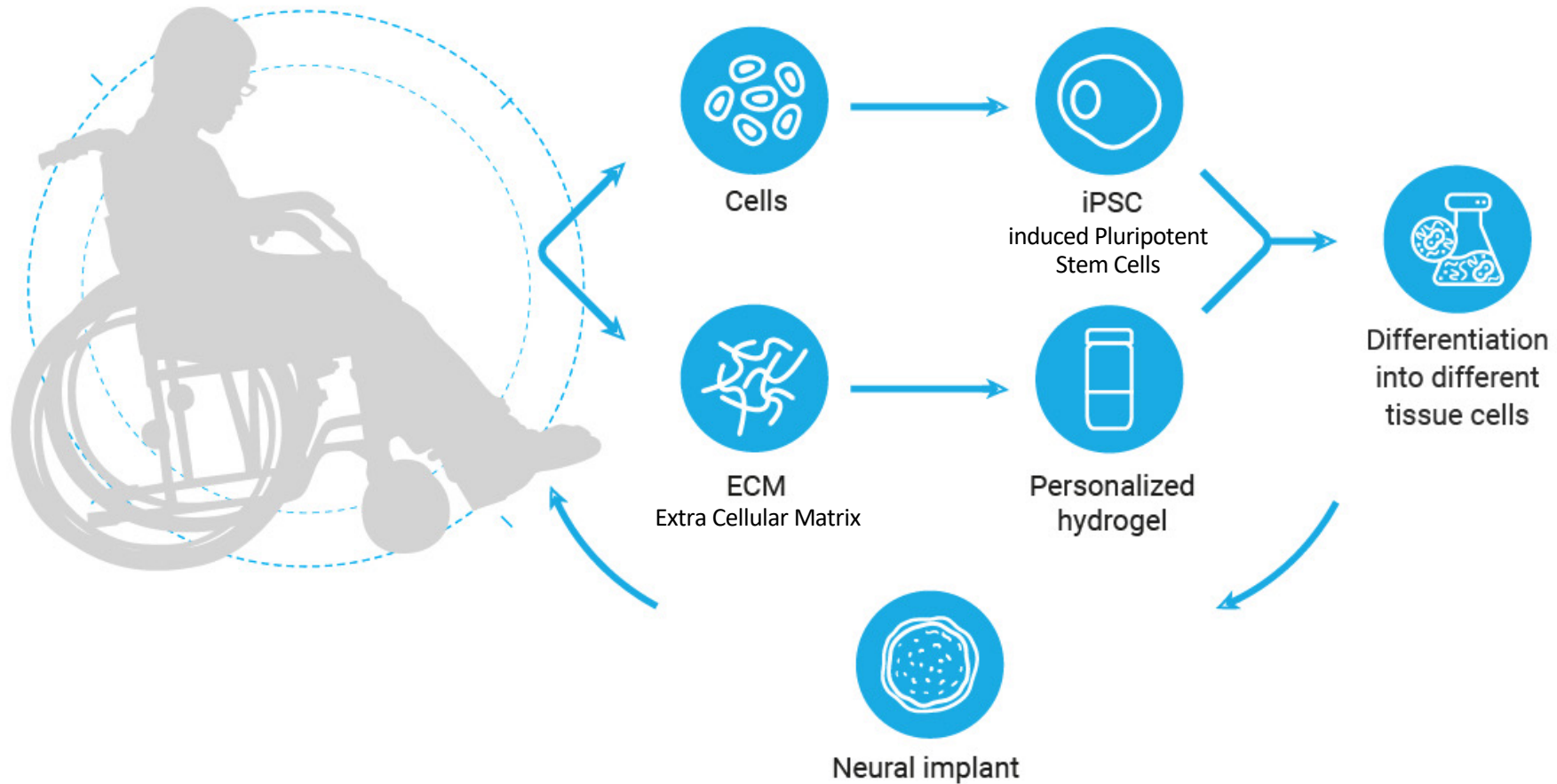
*“Humanity has succeeded in reaching space, but we still haven’t managed to bridge the two centimeters of an injured spinal cord.”*

*Yariv Bash, Co-founder SpaceIL*

# Company overview and highlights

<b>The problem</b>	<ul style="list-style-type: none"><li>• No available treatment for SCI - irreversible loss of motor/sensory/autonomic functions</li><li>• Most developed therapies are synthetic/allogeneic which may lead to an immune response</li></ul>
<b>Our solution</b>	<ul style="list-style-type: none"><li>• <b>100% autologous tissue engineered product may serve as an ideal solution for SCI patients</b></li><li>• <b>Personalized treatment, reduced potential immune response</b></li></ul>
<b>Market and opportunity</b>	<ul style="list-style-type: none"><li>• Almost 300,000 SCI patients in the US today</li><li>• Approximately 17,000 new SCI cases per year in the US</li><li>• Manufacturing sites in close proximity to specialized neurosurgical centers worldwide</li></ul>
<b>Regulation</b>	<ul style="list-style-type: none"><li>• Classification: Advanced Therapy Medicinal Product (ATMP)</li><li>• Early interaction with regulatory authorities (FDA/EMA)</li><li>• PreIND meeting with FDA – accomplished</li></ul>
<b>Status and timelines</b>	<ul style="list-style-type: none"><li>• Current status – RD, preclinical studies</li><li>• First in Human (FIH) clinical trial – 2024, Israel</li></ul>
<b>IP</b>	<ul style="list-style-type: none"><li>• Two pending patents</li></ul>

# Matricelf platform generates autologous, 3-dimensional implants for SCI

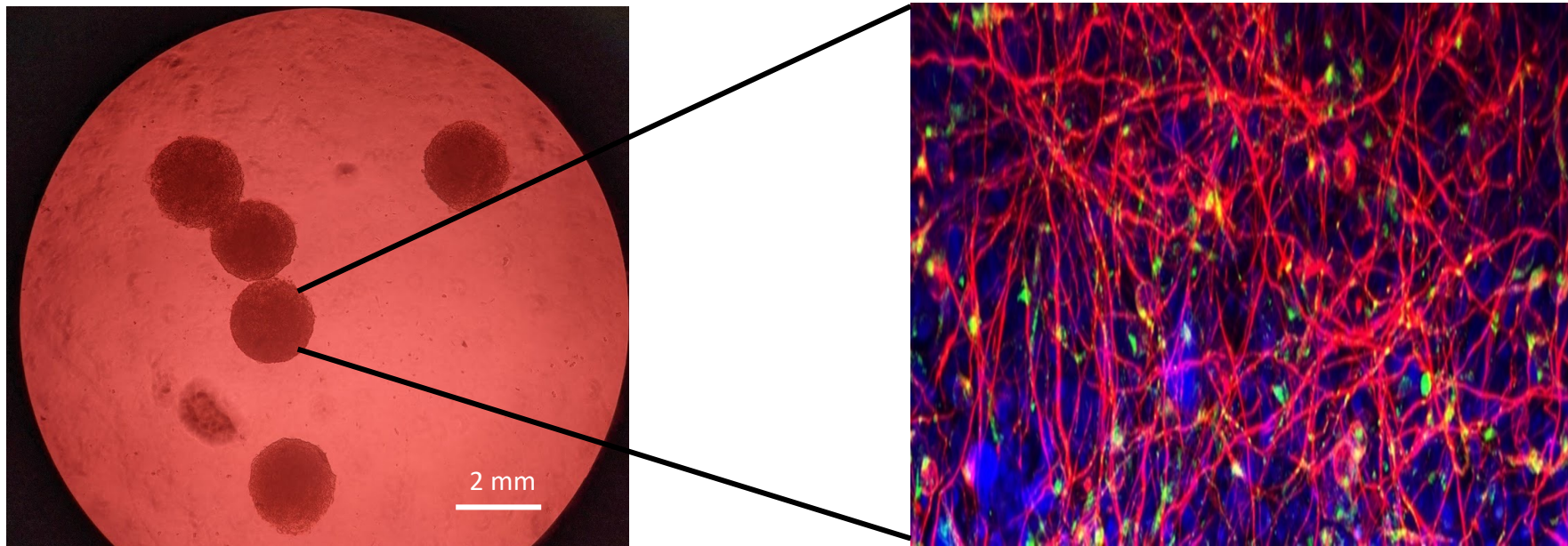


Europe/US titled "Omentum based scaffold and delivery system" (pending)  
Europe/US titled "Particles comprising decellularized Omentum" (pending)



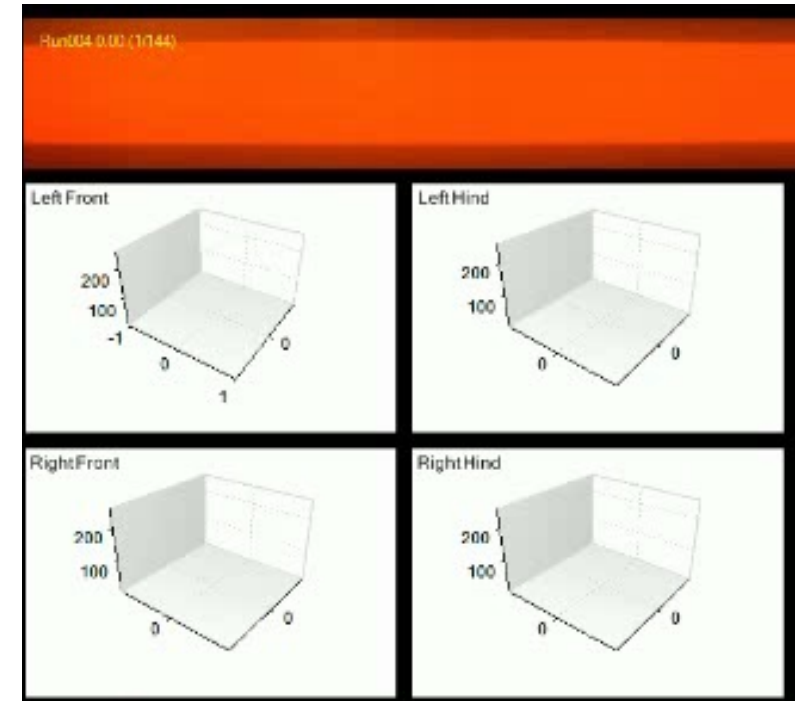
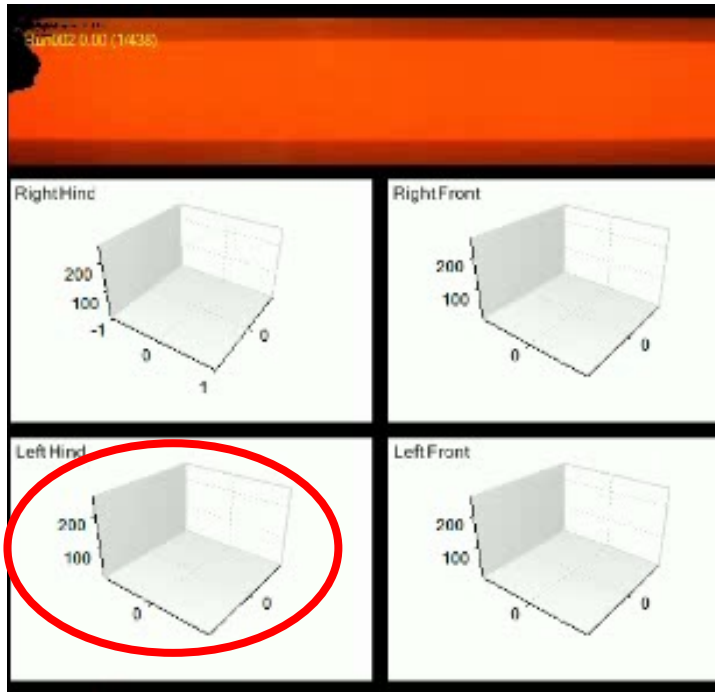
# iPSCs integration in extracellular matrix yields functional neural implant

- ✓ Incorporation of iPSCs within extracellular matrix followed by controlled differentiation
- ✓ New synapses and neurons creating a neural network
- ✓ Matured three-dimensional tissue






































# Mice treated with neural implants regained their walking abilities

## Control



- Two months follow up post spinal hemi-section in mice
- “Cat walk” – four limbs motor function and gait analysis
- Control group – hemiparesis (circled in red)
- **Mice treated with neural implants regained their walking abilities**

# Matricelf offers an autologous implant with no rejection

Analysis of alternative technologies							
	 matricelf						 STEM CELL PROGRAM
Autologous cells							
Pluripotent cells							
Autologous scaffold							
3D structure							

# STARTUP+



I AM A  
FALLING  
WALLS  
FINALIST  
2020







## Completion of tech-transfer from Tel Aviv university (Jun 2021)



Tel Aviv Stock Exchange (TASE): MTLF



# The team



**TAL DVIR, PhD**  
*Founder, CSO*



**ASAF TOKER, MD**  
*CEO*



**TAMAR HAREL ADAR, PhD**  
*VP R&D*



**ALON SINAI**  
*Founder, COO*



**TAL BEN NERIAH, MSc.**  
*Director of Operations*



**SIGAL RUSSO, CPA**  
*CFO*



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# IDEA<sup>2</sup> – progress against goals

Company goals	Original goals	Status
3 months	Characterize the stakeholders	Stakeholders are: patients & their families, physicians/nurses and insurance companies
	Build focus groups	Local neurosurgeons focus group scheduled to Oct 2021
	Compose questionnaires	<b>Accomplished</b> <ul style="list-style-type: none"> <li>• Patients questionnaires were distributed and feedback is being collected</li> <li>• Neurosurgeons meeting</li> <li>• Israeli MOH meeting</li> </ul>
6 months	Based on focus groups feedback - finalize market, target population and business plan	Focus groups will assist in reducing risks associated with stakeholders concerns
	Establish pricing and reimbursement strategy	With the help of IDEA <sup>2</sup> mentors, the company plans to contact specific advisors



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**Thank you**

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