BRIDGE TO RECOVERY

From a father's kitchen table to FDA-cleared surgical robots and brain–computer interfaces, the global race to reverse paralysis is no longer science fiction



David Nicholls and his son Daniel

Twenty years ago, renowned UK chef David Nicholls' son suffered a life-changing spinal cord injury. Rather than accept the prognosis – that Daniel's paralysis would be permanent – David set up the Nicholls Spinal Injury Foundation (NSIF) from his kitchen table and began funding the research that the medical establishment said was impossible.

Two decades and more than £7m ($9.6m) later, that hope is paying off. NSIF-funded researchers achieved the world's first reconnection of severed spinal nerve fibres in 2014 – a moment that shifted spinal cord injury (SCI) science from theoretical possibility to clinical reality. Pre-clinical human trials are now expected in the UK within three to five years.

In November 2025, following the foundation's landmark 20th anniversary celebration at the Mandarin Oriental Hyde Park – an event attended by HUMANWARE Editor-in-Chief Méline Liu – Nicholls announced that the evening had raised £185,000 ($254,000) to accelerate that very research.

THE BIOLOGICAL FRONTIER

This NSIF-funded work centres on olfactory ensheathing cells (OECs) – specialised cells from the nasal mucosa that naturally support nerve regeneration. It remains one of the most promising biological approaches to repairing the spinal cord, but it is no longer alone.



Above: Darek Fidyka, the first man to receive pioneering treatment to cure paralysis through spinal injury in 2014

NSIF IN NUMBERS

Founded: **2005**

Total raised: **£7m+ ($9.5m+)**

World-first nerve reconnection: **2014**

Funds raised at 20th anniversary event: **£185,000 ($254,000)**

UK clinical trials anticipated: **within 3–5 years**

Funding source: **entirely donor-supported**

In August 2025, Griffith University in Australia launched a world-first Phase 1 clinical trial using OEC 'nerve bridges' – tiny biological scaffolds implanted at the injury site to encourage severed nerves to regrow. Led by Professor James St John, the trial builds on three decades of research and targets patients with chronic spinal cord injuries.

Meanwhile, the pharmacological frontier is advancing in parallel. Canadian biotech NervGen Pharma reported positive Phase 1b/2a results for NVG-291 in June 2025 – the first drug candidate to show statistically significant improvement in motor connectivity in chronic SCI patients. At Northwestern University, a 'dancing molecules' therapy developed by Professor Samuel Stupp received FDA Orphan Drug Designation in July 2025, with first human trials targeted for late 2026.

As research continues in labs across the world, repair is now no longer a question of if, but when.

THE SURGICAL REVOLUTION

While biologists work to rebuild the body's wiring, other innovations are transforming how surgeons operate on the spine itself.

In April 2025, Swiss company LEM Surgical received FDA 510(k) clearance for its Dynamis Robotic





Left: NSIF Founder David Nicholls and Professor Ahmed Ibrahim, who has been involved in pioneering research for spinal cord injury regeneration
Below: The Dynamis Robotic Surgical System is designed to enhance the accuracy and control during spine surgeries. Photo: LEM Surgical



DYNAMIS AT A GLANCE

Developer: **LEM Surgical (Bern, Switzerland)**
System: **3 robotic arms, single-cart platform**
FDA cleared: **April 2025**
First US procedures: **October 2025, Southern Hills Hospital, Las Vegas**
Strategic partner: **NVIDIA (CES 2026 showcase)**
US rollout: **expanding throughout 2026**

Surgical System, described as the first-of-its-kind multi-arm surgical robot for hard tissue surgery. Three robotic arms – two for surgical guidance, one for optical navigation – are consolidated into a single cart that slots beneath the operating table, giving surgeons sub-millimetre precision during complex spinal procedures.

By late 2025, the Dynamis was in routine clinical use at Southern Hills Hospital in Las Vegas. In January 2026, it was showcased at NVIDIA's CES keynote as part of a strategic partnership to integrate AI into next-generation surgical robotics.

As regenerative science develops therapies to heal the spinal cord, robotic technology is refining the surgical precision required to deliver them.

THE CONVERGENCE

Joining these remarkable developments in paralysis reversal is another: the emergence of brain–computer interfaces that bypass the spinal injury entirely.

In January 2026, ONWARD Medical announced that seven study participants had been implanted with its ARC-BCI system – a 'digital bridge' that uses AI to decode brain signals and translate movement intention into targeted spinal cord stimulation. Patients have regained the ability to move their own paralysed limbs through thought alone.

As a small, independent charity with no government funding, NSIF represents the power of individual determination to shift the trajectory of an entire scientific field. What David Nicholls started at his kitchen table 20 years ago is now part of a global convergence – of biology, robotics, neurotechnology and philanthropy – that is turning what was once a life sentence into something altogether more hopeful.

The Nicholls Spinal Injury Foundation (nsif.org.uk) relies entirely on the generosity of donors and supporters. Learn more about LEM Surgical at lemsurgical.com