



NeuroGraft



Development of Functionalised Cell Seeded Bio-artificial Organ for Transplantation in Nerve Repair

Network of Excellence for Functional Biomaterial (NFB)
National University of Ireland Galway
Biosciences
Galway, Ireland



www.neurograft.eu



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OVERVIEW

NeuroGraft will develop a functionalized multi-channel conduit incorporating cells to target the inflammatory response and enhance transplanted stem cell survival as a unique and effective intervention to promote neuroprotection for enhanced nerve function in spinal cord injury (SCI). This programme involves five partners (one university and four SMEs) across four countries with distinct synergistic expertise (including regulatory expertise) to develop cell seeded functionalised bio-artificial organs to repair the spinal cord following injury.

PROGRAMME OBJECTIVES

Fabricate NeuroGraft conduit under GLP and GMP conditions.

Optimise in vitro characterisation of stem cells.

Validate the role of incorporated cells following SCI under GLP conditions.

Validate safety and efficacy of the stem cell seeded NeuroGraft conduit to facilitate neuroregeneration and functional recovery following SCI under GLP conditions.

SPINAL CORD INJURY AND NEUROGRAFT

Inflammatory processes following SCI have limited the success of promising stem cell transplantation therapies recently. The NeuroGraft prototype developed at National University of Ireland Galway is a multichannel collagen conduit which will address the primary (neurodegenerative) and secondary (inflammatory) pathological events following SCI. Transplantation of stem cells encapsulated or grown on the surface of a conduit system increases cell survival, migration and differentiation *in vivo*. Secondary cascades following traumatic injury to the CNS further inhibits recovery by activating the innate immune response, apoptosis and necrosis.

ADVANTAGES OF NEUROGRAFT

In addition to administration of an anti-inflammatory cytokine the NeuroGraft conduit itself is capable of reducing the inflammatory response following SCI. The NeuroGraft conduit is advantageous compared to other conduits that are currently undergoing clinical trials.

OUR CONSORTIUM

National University of Ireland Galway (NUIG), Ireland

Vornia Biomaterials (VN), Ireland

Stemmatters (SM), Portugal

BiomaTech NAMSA (BT), France

Obelis European Authorized Representative Centre (Obelis), Belgium

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