

Innovative Research Solutions with Industry

Medical Devices

CLIENT:
Neuravi Ltd

AREA:
Biomedical – Neurovascular



Designing and developing advanced in vitro simulators to target neurovascular diseases



Neuravi is experienced in endovascular device development and global commercialization, with the company's initial technology platform addressing acute ischemic stroke. In collaboration with international researchers and clinicians, the company seeks to develop new understanding that will drive innovative solutions to treat this challenging and devastating disease.

Neuravi required patient-specific neurovascular phantom models based on medical images. The main challenge faced by the company was the manufacturing of flexible thin walled cerebral vasculature models capable of testing their neurothrombectomy device for ischemic stroke cases and the design of a cerebral test facility capable of housing these models.

The GMedTech biomedical centre within Galway-Mayo Institute of Technology (GMIT) is actively focused on cardiovascular research. The centre has a recognised unique capacity for designing and developing advanced pre-clinically relevant in vitro simulators replicating physiological type flows through various sections of the human body. GMedTech has laboratory and office facilities for the generation of 3D anatomical models based on medical images which are applied for developing, manufacturing and testing physiological flow simulators. The centre has access to expert medical knowledge, medical imaging processing capabilities, engineering competence with advanced materials and manufacturing technologies.



An in vitro simulator at GMedTech

Due to this recognised expertise, Neuravi Ltd undertook an Enterprise Ireland sponsored innovation partnership with GMedTech on "Cerebral Vascular Model Generation". Neuravi contributed 20% of the costs of this project, which provided patient-specific neurovascular phantom models. A database of medical images was compiled within the centre. This enabled Neuravi to select a challenging anatomy which was then translated into a patient-specific cerebral test facility. Neuravi's neurothrombectomy device for ischemic stroke was tested within this facility during the company's seed phase and this helped to de-risk and optimise the device design prior to clinical use. →

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•→ The testing of Neuravi's neurothrombectomy device within the cerebral phantom models proved the efficacy of the device to investors as part of the venture capital (VC) funding phase. This successful demonstration of Neuravi's device within the patient-specific in vitro test system helped Neuravi secure €5.2 million of VC funding. The impact of this research resulted in GMedTech being shortlisted as a finalist in the Irish Medical Device Association Academic Excellence Research Award in 2013.

The successful acquisition of VC funding created 25 new jobs and resulted in strong economic benefit to the Galway region. Additional health impacts are also expected as it is envisaged that this cerebral test facility developed within GMedTech centre will provide clinicians the opportunity to test various surgical methods for the treatment of neurovascular diseases. ■

TESTIMONIAL

Michael Gilvarry

*Head of Research
& Development
Neuravi Ltd*

"The neurovascular models developed by GMedTech played an important role in Neuravi's EmboTrap device development, and we use these models in training stroke doctors in our technology. The work at GMedTech has made an important contribution to the successful treatment of acute ischemic stroke patients with our device."



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