NerveRepack

NerveRepack is a KDT-JU Research and Innovation Action that will develop a new generation of bidirectional implantable electrodes connecting the human nervous system with external mechatronic aid devices such as exoskeletons and exoprostheses, thus helping people with arm amputations or leg paralysis regain their motor and sensorial functions. Electrodes will be the primary bidirectional interface to the nerves, followed by the implantable electronics module. All the components will be designed, fabricated, and tested through three demonstrators aimed at different categories of patients: with forearm amputation, with lower limbs paralysis and with single leg paralysis. The new generation of exoprostheses and exoskeletons controlled by the patient's brain via the nervous system will change the paradigm of support for people with disabilities and will have an important social, economic, medical, and technological impact. The technology advances including miniaturization, wireless communication and power supply, progresses in medical microsurgery tools and methods, new biocompatible materials and technologies will considerably contribute to the project implementation.

The NerveRepack consortium is led by The National Institute for R&D in Microtechnologies (IMT) in Bucharest and is made up of major European research institutes, public and private enterprises, plus highly respected universities – all focusing on biomedical research and innovation. These 27 high-profile partners from 10 European countries integrate members from research and industry and with a broad range of expertise. NHRF brings in its state-of-the-art knowledge, infrastructure, and expertise on a. 3D cell culture models to map cell microenvironment and cell responses, b. biocompatibility wet/dry lab pipelines for optimum design and performance and c. computational/biomechanical modelling and simulations.

NerveRepack

KDT JU KEY DIGITAL TECHNOLOGIES JOINT UNDERTAKING

Co-funded by the European Union

People with arm amputations or leg paralysis will be able to regain motor and sensory functions. "The NerveRepack project was created to address a pressing need to support people with severe nerve damage affecting their upper or lower limbs. These people suffer amputations or paralysis, and their abilities to move, work, care for themselves are severely diminished or lost", said Dr. Carmen Moldovan, project coordinator.

The project kicked off on the 1st of June 2023.

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