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ANCE4STROKE

Autologous neurovascular cell ecosystems (ANCE) to repair ischemic stroke in mice, primates, and humans

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Over 100 million people worldwide suffered from stroke. Following a stroke event, the affected brain region is deprived of blood supply, leading to the death of the neural tissue associated with irreversible cognitive and motor impairments. To circumvent the loss of tissue and function, we previously developed a cell therapy termed Autologous Neural Cell Ecosystems (ANCE). The ANCE are grown from a small brain sample of the patient, offering a safe and effective approach for re-implantation into the brain. We previously showed that implanting ANCE into the brain of nonhuman primates alleviates motor deficits due to Parkinson's disease and cortical lesion. ANCE implants are thought to promote the formation of new blood vessels and neural repair tissue. These features are particularly relevant in the context of a stroke. In this project, we will combine in vitro and preclinical models together with cutting-edge techniques to uncover the mechanisms through which ANCE implants mediate tissue repair and improve recovery after a stroke. This knowledge will allow us to refine the design and delivery of ANCE implants. Following the completion of this first phase, we will conduct a clinical trial to test the safety and early feasibility of implanting ANCE therapy in patients with chronic stroke to improve motor recovery. Our goal is to establish a path toward a pivotal clinical trial to demonstrate the efficacy of ANCE implants to improve brain repair and motor recovery following a stroke in humans.