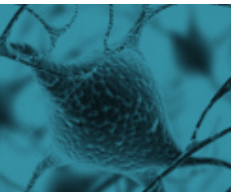

FUNDED PROJECTS

GINA \\ BIOMATERIALS SCAFFOLDING FOR BRAIN RECONSTRUCTION IN STROKE

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Stroke in mammals, including humans, is followed by proliferation and migration of stem cells into the penumbra and core ischaemic zones. However, this process is followed by massive cell death at the core zone, clinically resulting in incomplete recovery in many cases. We hypothesize that this is due to an inadequate milieu at the necrotic area and/or insufficient stimulation of stem cell proliferation and migration. Thus, implantation of biocompatible scaffolding materials permitting cell survival and differentiation along with angiogenesis within them, associated with electric stimulation to promote neurogenesis and cell integration, may improve cell colonization and survival and lead to functional improvement of the neurologic condition in animal models of stroke.

In our consortium, one group in Valencia will make biocompatible materials, and a group in Mainz will test "in vitro" the ability of these to preserve survival of neurons and the development of angiogenesis. Two groups in Madrid and Venezia-Padova will apply these biomaterials and neurostimulation to animal stroke models. A group in Toronto will test those hypotheses in a different model of stroke (hippocampal ischaemia). These results will probably lead to clinical trials using implant of biomaterials and neurostimulation for the reconstruction of brain defects due to stroke.

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