


Lorenza Lazzari

NANO4STROKE

Anti-inflammatory miRNA nanoshuttles as therapeutic strategy for stroke





Coordinator:

 Lorenza Lazzari, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy

Contact:

lorenza.lazzari@policlinico.mi.it

Partners:

-  Pierre Gaudriault, Cherry Biotech
-  Sophia G. Antimisiaris, University of Patras
-  Anna M. Planas, Consorci Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS)
-  Aurel Popa-Wagner, University of Medicine and Pharmacy of Craiova

Stroke is a leading killer in industrialized countries. Treatments are limited to the acute phase of the disease, due to a narrow therapeutic time window and complex pathophysiology. The inflammatory reaction triggered by the ischemic cascade remains an unmet clinical issue. It is responsible for the propagation and amplification of brain damage in later phases of the disease and leads to dementia and permanent disability with dramatic social and economic impact.

NANO4STROKE will generate a drug delivery nanoplatform inspired by therapeutic biological vesicles carrying anti-inflammatory miRNA. To this aim, the Consortium will develop synthetic vesicles functionalized to target ischemic brain regions, to cross the blood-brain-barrier and to release this therapeutic miRNA cargo into the injured microenvironment. These miRNA nanoshuttles will be tested for biodistribution, toxicity and modulation of inflammation in a tailored organ-on-chip model and in young and aged/co-morbid animal models of stroke in view of future clinical applications. NANO4STROKE technology will tackle the current lack of therapies for still untargeted consequences of stroke. The same nanotherapeutics strategy could be implemented in other neurological diseases.

