ENAMEP
Exosomes as innovative Nanomedicine Approaches to reverse obesity and its MEtabolic and Psychotic complications with specific targeting of the hypothalamus

Coordinator:
Dr. Ramaroson Andriantsitohaina,
Université d’Angers, Stress oxydant et pathologies métaboliques - SOPAM Laboratory, France

Contact:
ramaroson.andriantsitohaina@univ-angers.fr

Partners:
López Perez Miguel Antonio (Miguel López), Instituto de Investigación Sanitaria, Santiago de Compostela (IDIS), Spain

Johan Anders Fernø, Haukeland University Hospital, Norway

Marc Grégoire, Institut national de la santé et de la recherche médicale (INSERM), France

Obesity is reaching pandemic proportions worldwide. It is directly and indirectly causing thousands of deaths per year. Currently, there is not an efficient treatment against obesity, apart from quite invasive bariatric surgery. Thus, there is an urgent need for new therapies and preventive approaches. The aim of ENAMEP project is to develop a “nanobiomedicine” approach to harness nanoscale cell-derived extracellular vesicles, namely exosomes, as “cargos” of specific therapeutic molecules. The aim is to deliver specific DNA in the hypothalamic area, modulating energy balance and tackling thermogenesis for the treatment of obesity. This can be obtained via specific inhibition of lipid metabolism targets in the ventromedial nucleus of the hypothalamus by the use of peripherally administered engineered exosomes. Controlling central regulation of obesity would spawn new strategies to monitor efficacy of therapy with minimal side effects. The use of engineered exosomes is the only way to target specific hypothalamic area by intravenous delivery, making them affordable for therapeutic use.