

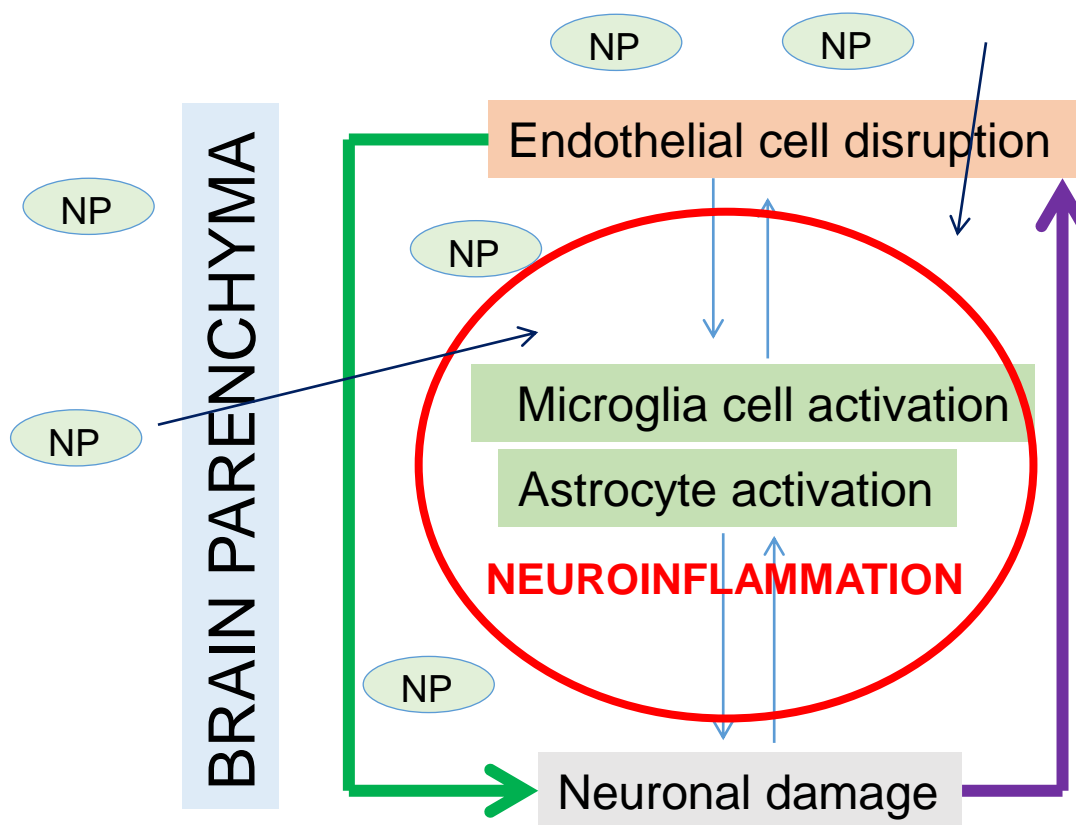


WP: Nano-Neurotoxicity

1. Increasing reports indicate that inhaled **NPs can reach the brain** and may be **associated with neurodegeneration**. It is necessary to evaluate the potential toxic effects of NPs on brain because most of the neurobehavioral disorders may be of environmental origin (Burch et al 2001)
2. There has been some argument about whether or not **NPs can cross the blood–brain barrier** (Begley et al 1996)
3. Several studies have suggested that the **olfactory nerve pathway should be considered as a portal of entry to the central nervous system** in humans who are environmentally or occupationally exposed to airborne NPs (Tjalve 1999; Henriksson, 2000; Persson, 2003)

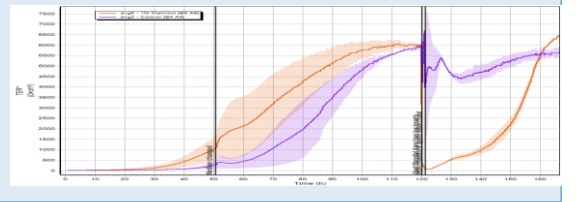
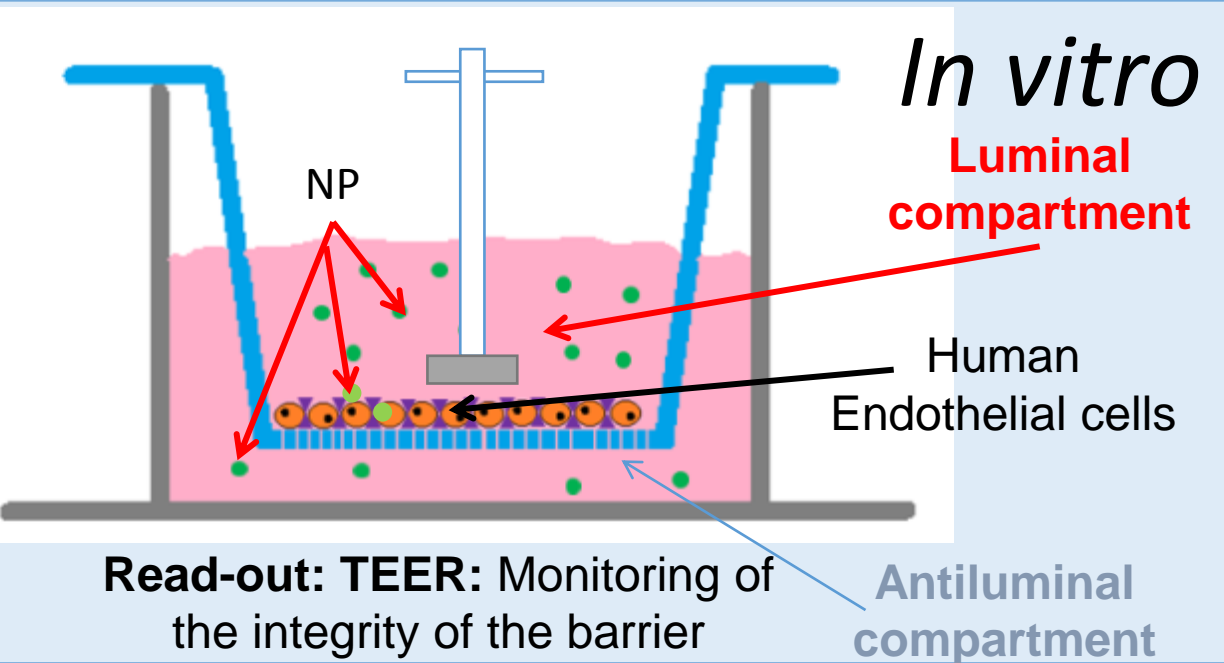
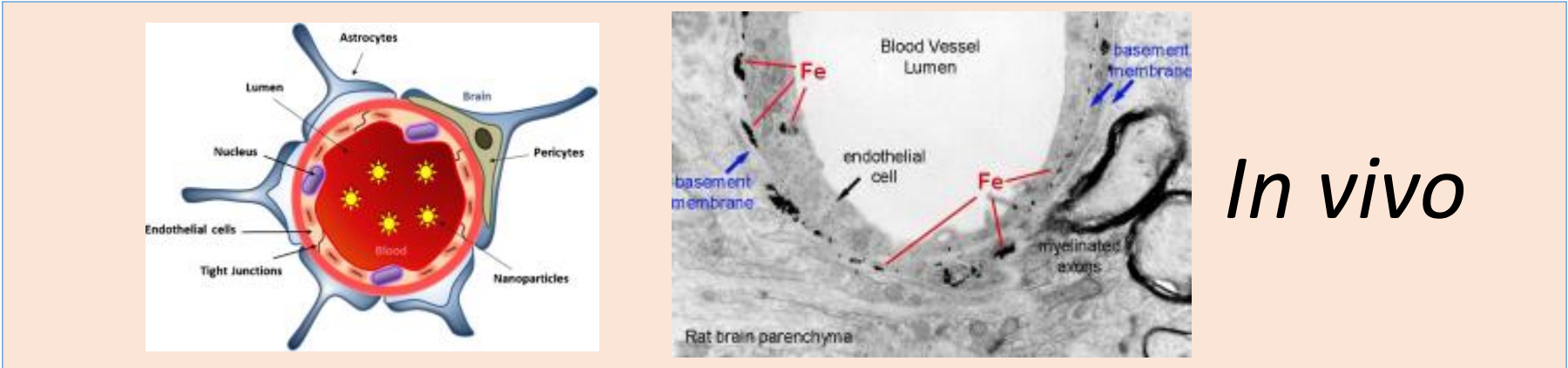
OBJECTIVES of our Work Package

To design in vitro models to **mimic the two ways of entry of NanoParticles to the brain parenchyma** and to assess the effect of the NanoParticles on the integrity of the BBB and the functionality of neural tissue



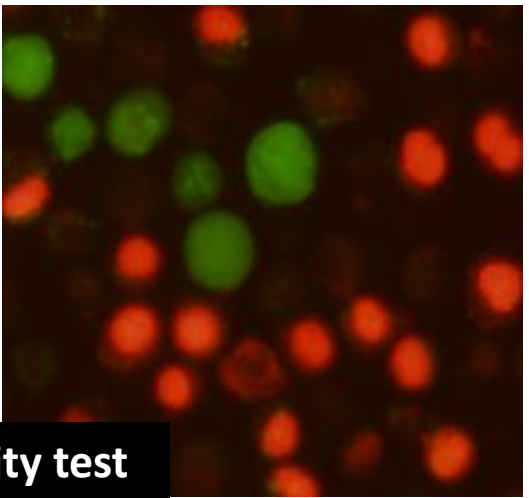
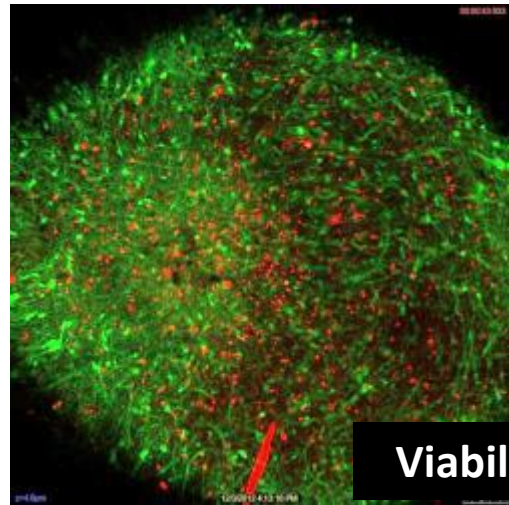
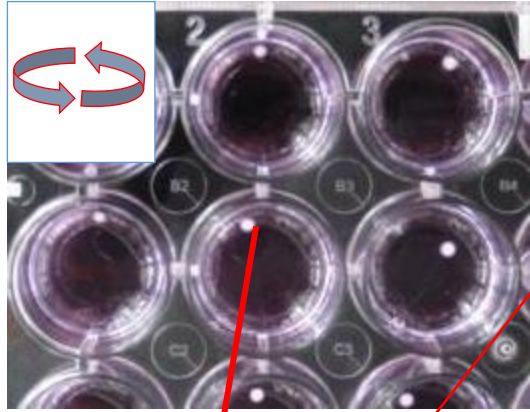
nano-Ag, nano-SiO₂, nano-TiO₂, graphene, carbon nanofibres....

METHODOLOGY: in vitro BBB model

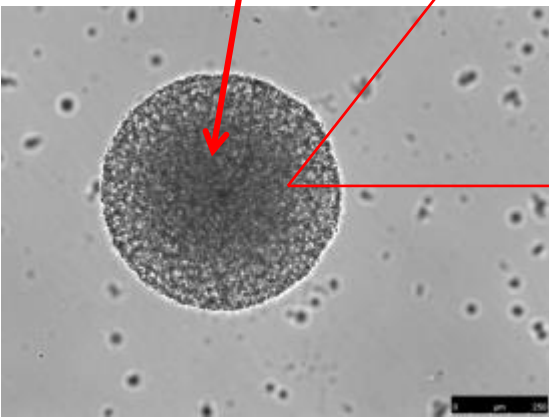


METHODOLOGY: 3D Neural Tissues for the assessment of the Neurotoxicity of NanoParticles

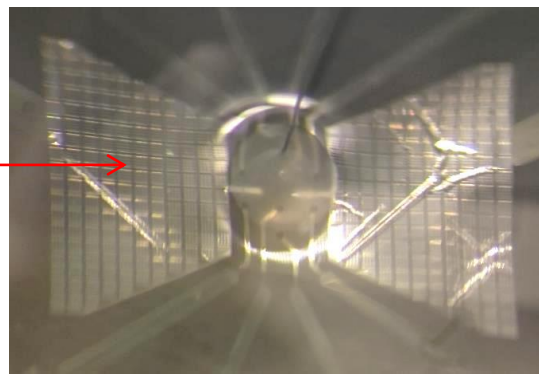
Protocol: Adding NanoParticles during or after NeuroSphere formation



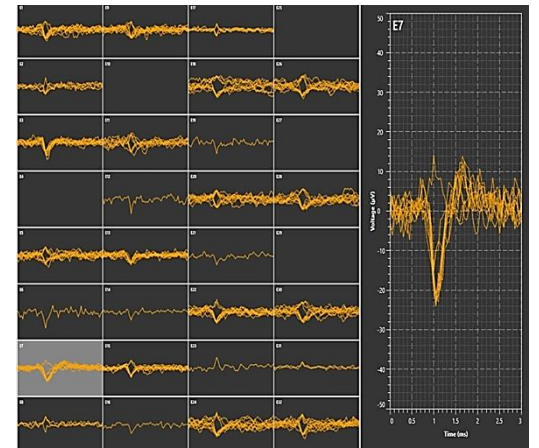
Viability test



NeuroSphere



Multi-Electrode Arrays



Monitoring Electrophysiology