Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information for

Distribution of Superparamagnetic Au/Fe nanoparticles in an isolated guinea pig brain with intact blood brain barrier

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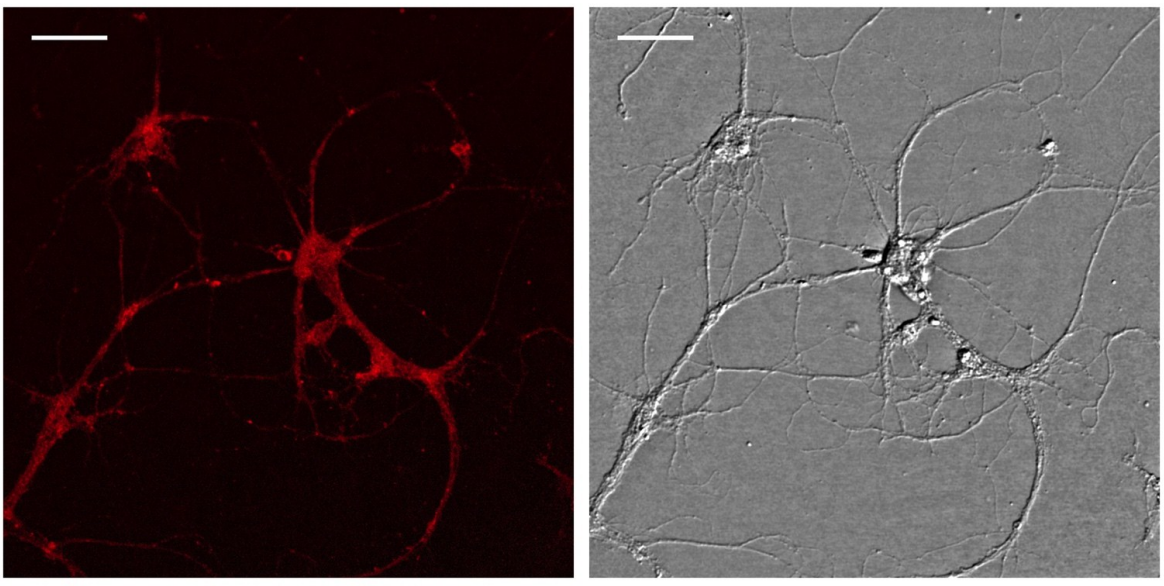
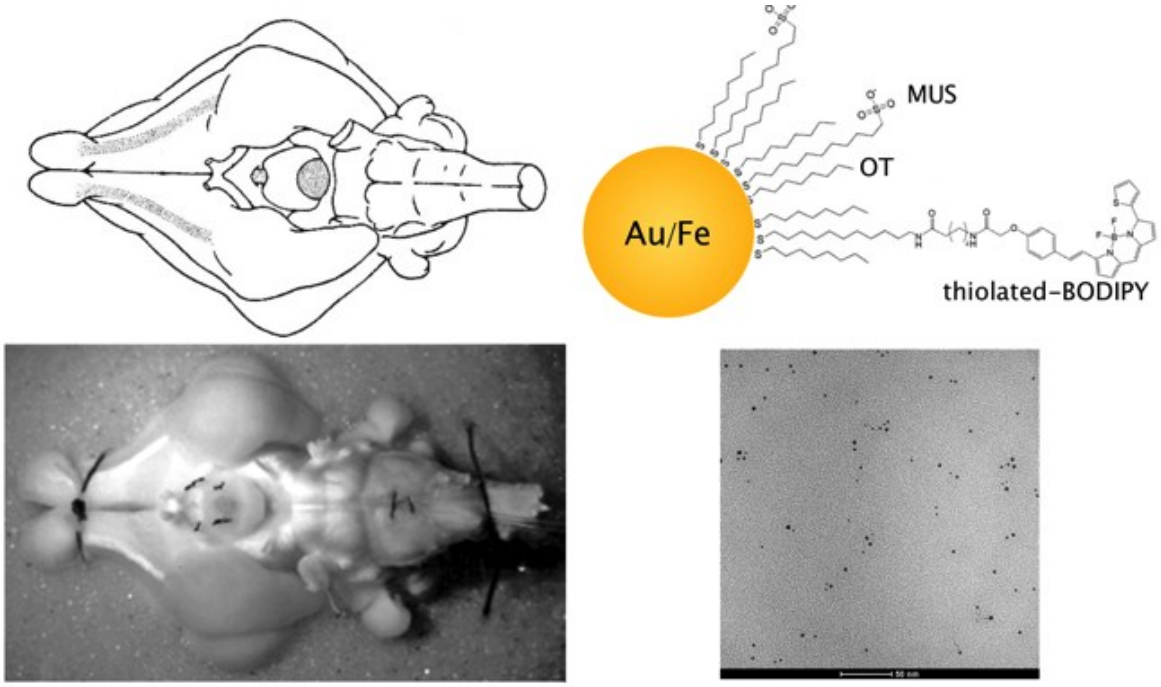
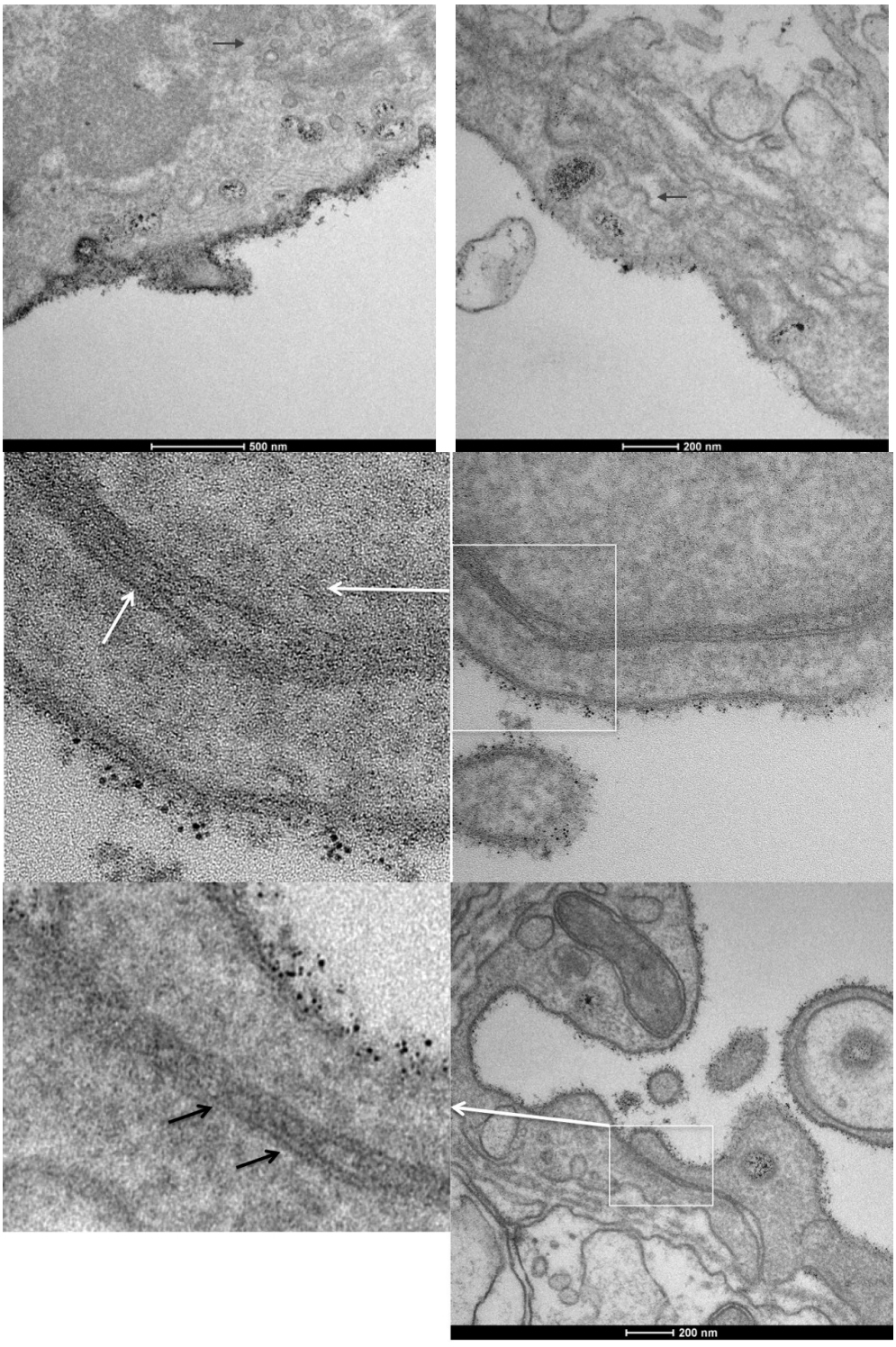


Supplementary Figure 1. Primary culture of Rat hippocampal neurons exposed for three hours to a 0.1mg/ml solution of NPs suspended in ACSF. Primary neuronal cultures were prepared from the hippocampi of 18-day-old fetal rats as described by Frassoni C. et al. (*Neuroscience* 131 (2005) 813–

823). Briefly, rat hippocampi were dissociated by treatment with trypsin (0.25% for 15 min at 37 °C), followed by trituration with a fire-polished Pasteur pipette. Dissociated cells were plated on poly-L-lysine-treated (SigmaAldrich) glass coverslips in MEM with 10% horse serum at densities of 20,000 cells/cm^2. Neurons were then exposed for 3h to a 0.1 mg/ml solution of BODIPY-labeled NP1s and live imaged by CLSM.



Supplementary Figure 2. Experimental set up of the experiments on the *in vitro* isolated guinea pig brain (A) B. Scheme of the Au/Fe MUS:OT NPs (NP1s) and their fluorescent-label functionalization. C. TEM micrograph of a sample of NP1s.



Supplementary figure 3. Caveolae (arrow) not involved in uptake and trancytosis process (top two panels). Bottom panels (four): NPs do not affect tight junctions.