

Supporting Information

Hypoxia-Induced Biosynthesis of Gold Nanoparticles in the Living Brain

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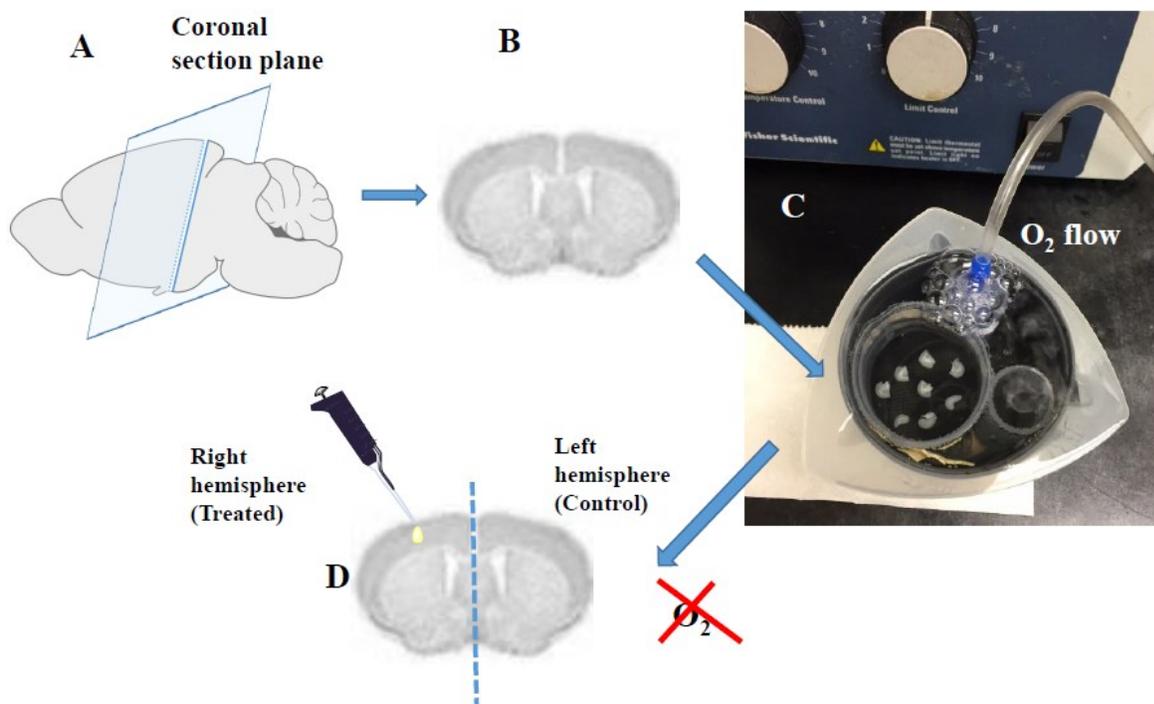


Figure S1: Schematic depiction of a coronal (frontal) plane mouse brain sectioning (A). The animal's brain was quickly dissected and sectioned on vibratome at a thickness of 450 μm (resulting tissue cross-section, B), for more details see ^{S1} and then placed into an oxygenated incubation solution for 40 min, maintained at 32-36°C. ^{S2} Tissue sections were left to rest at room temperature for 30 min before hypoxic induction. Hypoxia was induced by placing the slices into a gas-tight chamber and terminating the oxygen flow for 5 min, then AuCl_3 NPs precursor was added to the right hemisphere brain slice, while the left contralateral hemisphere was used as untreated control.

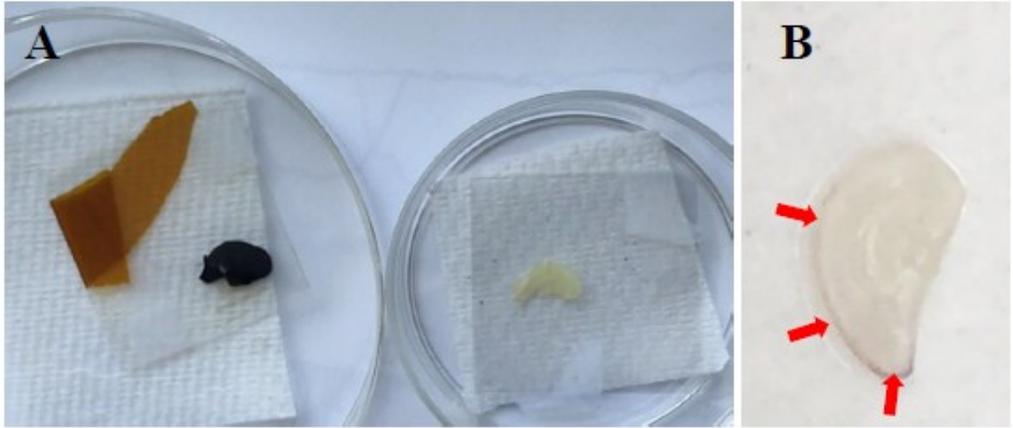


Figure S2. Hypoxic brain sections after incubation with 10 mM (A, left) and 100 μM AuCl_3 (B). The slices exposed to higher 10mM AuCl_3 under hypoxic (on the left) and oxygenated (right) conditions (A). While hypoxic brain slice (on the left) after treatment with 10 mM AuCl_3 shows significant dark staining, the oxygenated brain slice preserves its natural color (pale yellowish color is a result of its fixation with paraformaldehyde/glutaraldehyde fixative solution). The hypoxic slice treated with 100 μM AuCl_3 *before the fixation* (B) clearly shows the pink staining mainly in the outer regions of the brain section (red arrows) due to the formation of NPs.

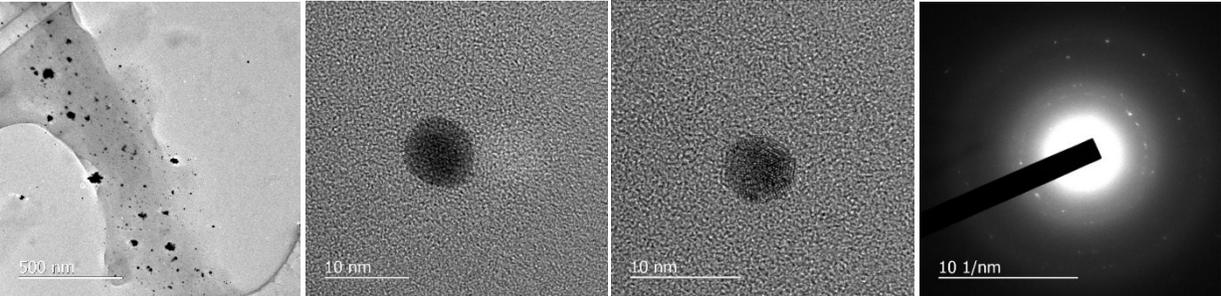


Figure S3: TEM images showing Au NPs formed in the hypoxic brain overloaded with 10mM AuCl₃ precursor.

Supporting references

S1. A. Agmon, B. W. Connors, Thalamocortical responses of mouse somatosensory (barrel) cortex in vitro, *Neuroscience*, 1991, **41**, 365-379.

S2. A.J. Sadovsky, J. N. MacLean. Scaling of Topologically Similar Functional Modules Defines Mouse Primary Auditory and Somatosensory Microcircuitry, *Journal of Neuroscience* 2013, **33** 14048-14060