

Supplementary methods

***Ex vivo* biodistribution and blood plasma concentration**

A separate cohort was used for biodistribution and plasma concentration analysis. At 7 d post-injury animals were intravenously injected with 50 μ l NPs and were sacrificed after 3 h post-injection. As a control group un-injected animals were sacrificed. Whole blood, brain, kidney, liver and spleen were harvested for further analysis from TBI and control animals. Fluorescent images were acquired under the IVIS Imaging System (Xenogen Imaging Technologies, Alameda, CA, USA) at Ex λ = 570 nm, Em λ = 620 nm.. Plasma was collected from the blood and the total NP concentration was analyzed using a standard curve obtained from serial dilution of the PEGylated NPs. The plasma samples were read using a fluorescent plate reader (BioTek Instruments, Inc., Winooski, VT, USA).