From Neurosurgery Department

Novel neuroprotection using antioxidant nanoparticles in a mouse model of head trauma Neurological severity score PBS (n=9) * P<0.05 (vs PBS) (score) Micelle protonation of amino groups (n=9) 8-PEG shell TEMPO biocompatibility (n=9) н+ 6-RNP TEMPO (n=9) PCTEMPO core 4 increased mobility hydrophobic core 2. Acidic pH : ON state of EPR signal 0 day1 day7 day3 Superoxide anion radical-scavenging capacity (U/ml SODea) Number of neurodegenerative microglia Number of neuroprotective microglia * P<0.05 15 * P<0.05 * P<0.05 (counts) (counts) each group; * P<0.05 each group; n=5 10 n=5 5 0 dav1 day3 dav1 day3 day7 dav7 TEMPO PBS Micelle TEMPO RNP RNP TEMPO RNP PBS Micelle (n=5) (n=5) (n=5) (n=5) We have evaluated the neuroprotective effect of antioxidant nanoparticles, which consisted of



a novel core-shell type nanoparticle containing 4-amino-4-hydroxy-TEMPO,

i.e., redox-active nitroxide radical-containing nanoparticles (RNP). RNP administration after TBI improved cognitive behavior and reduced contusion volume by improving reactive oxygen species scavenging capacity. In addition, RNP may chang the polarity of microglia.

> Reference: Takahashi T, Marushima A, Nagasaki Y et. al., J Trauma Acute Care Surg. (in press) Contact: aiki.marushima@md.tsukuba.ac.jp