



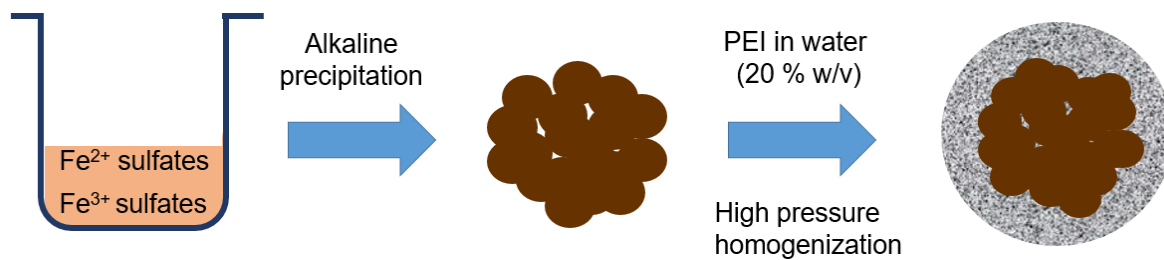
*Supplementary materials*

# Intravenous Injection of PEI-Decorated Iron Oxide Nanoparticles Impacts NF-Kappa B Protein Expression in Immunologically Stressed Mice

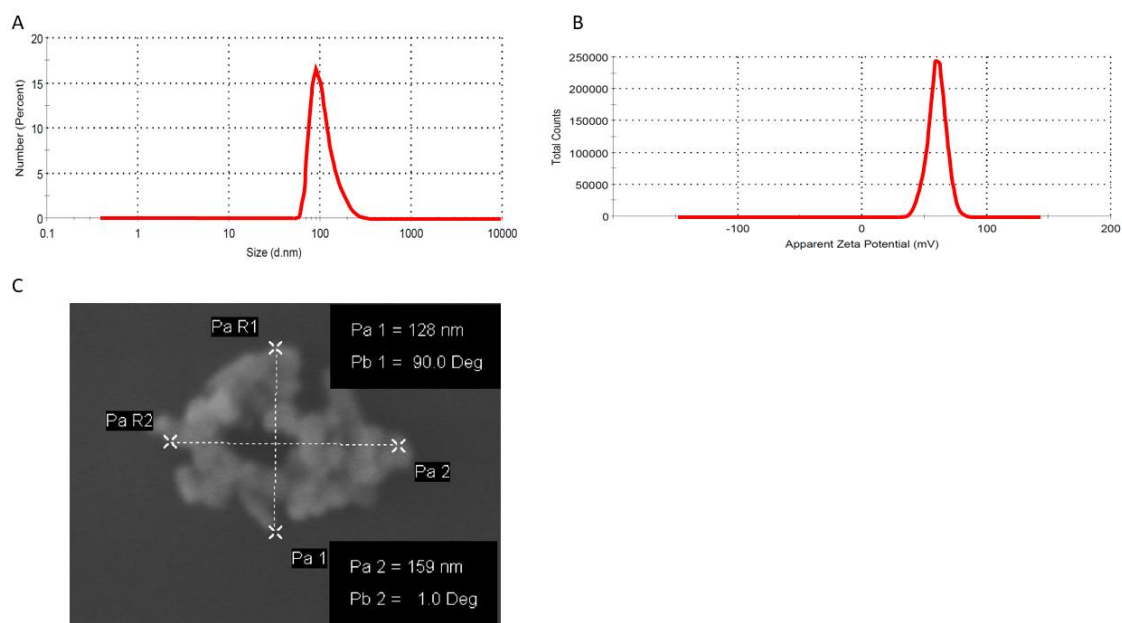
Claudia Schwarz <sup>1</sup>, Julia Göring <sup>1</sup>, Cordula Grüttner <sup>2</sup> and Ingrid Hilger <sup>2,\*</sup>

<sup>1</sup> Experimental Radiology, Institute of Diagnostic and Interventional Radiology, Jena University Hospital, Friedrich Schiller University Jena, Am Klinikum 1, D-07740 Jena, Germany; claudia.schwarz@krz.uni-jena.de (C.S.); julia.goering@med.uni-jena.de (J.G.)

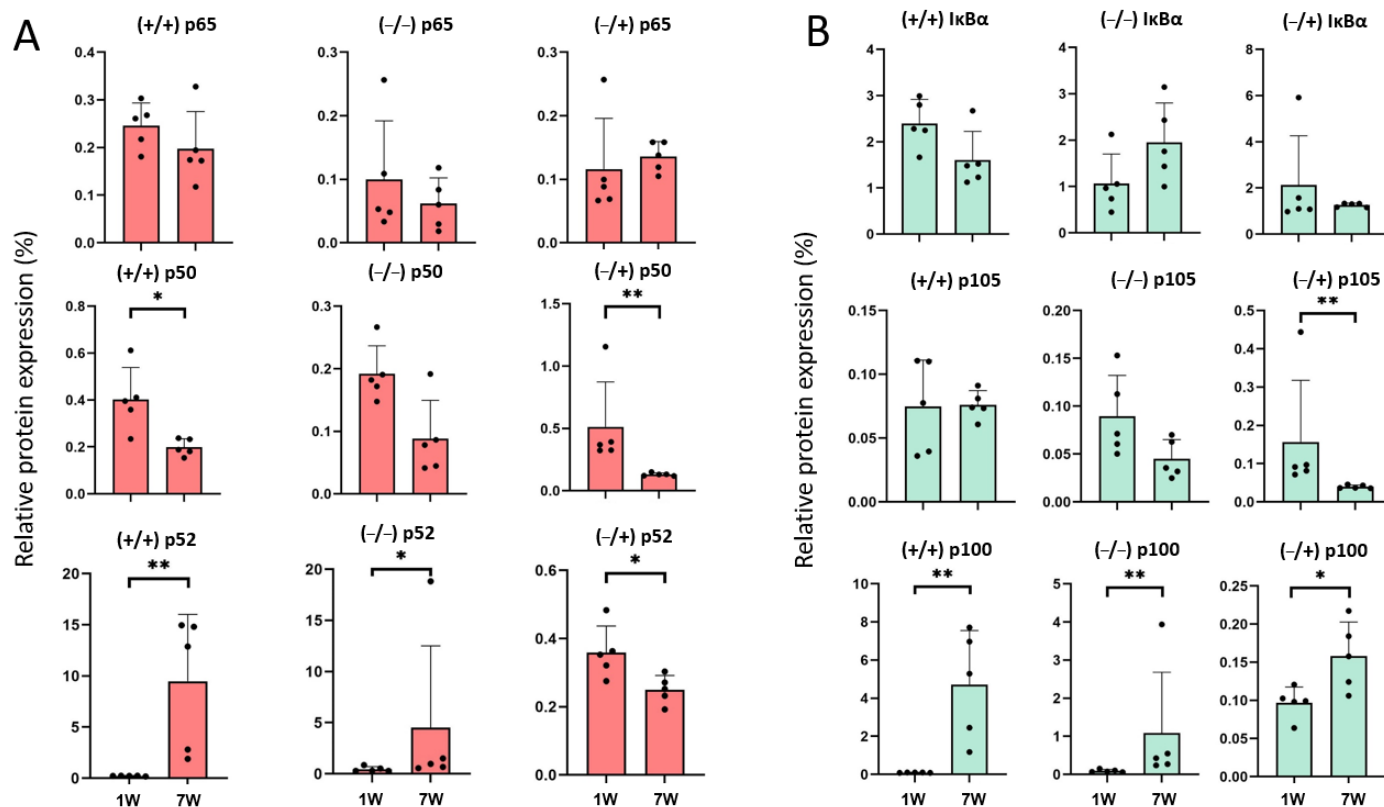
<sup>2</sup> Micromod Partikeltechnologie GmbH, Schillingallee 68, D-18057 Rostock, Germany; gruettnr@micromod.de



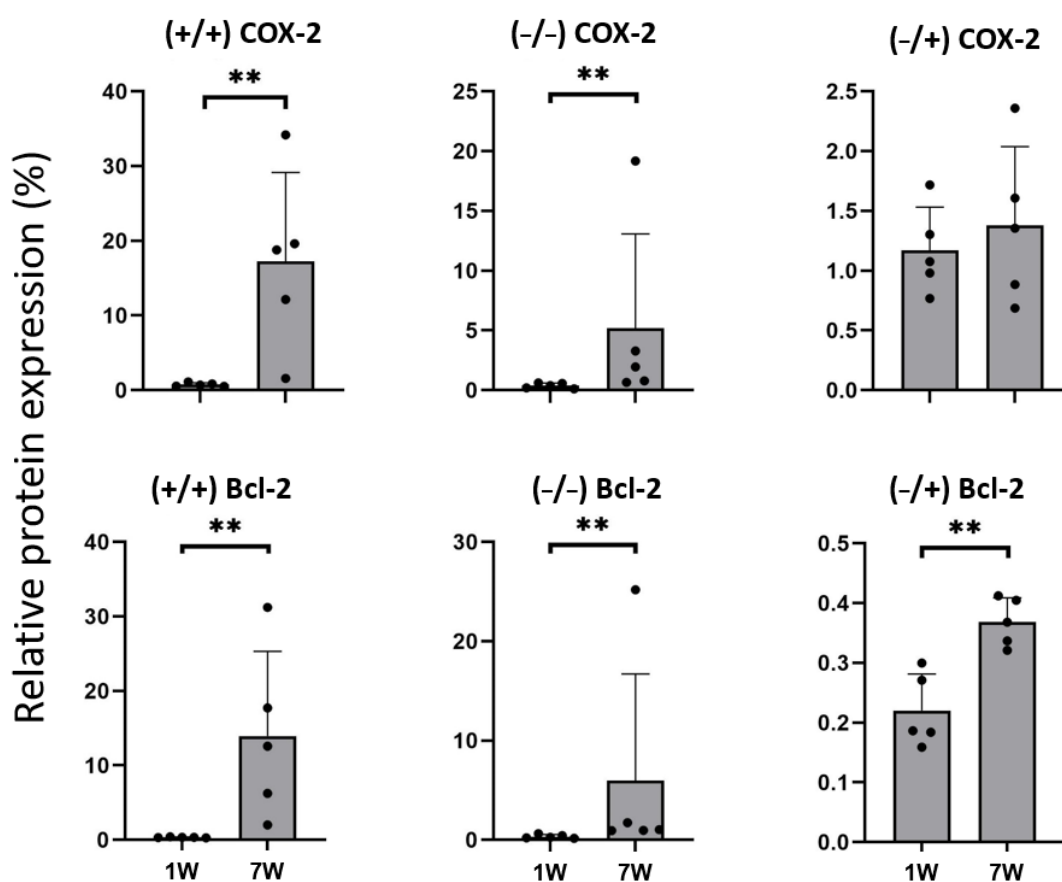
**Supplementary Figure S1.** Schematic view on the synthesis of PEI-MNPs.



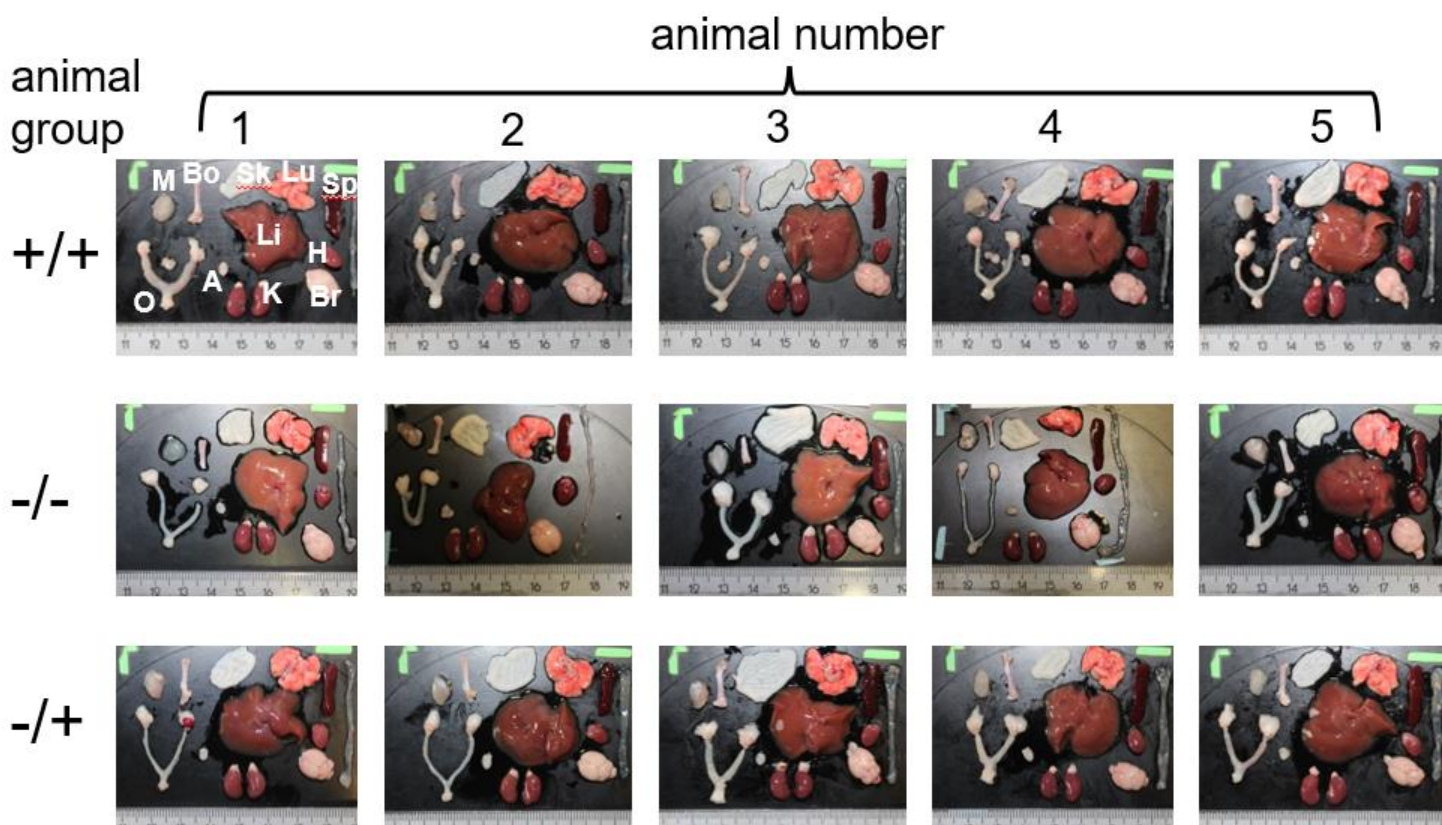
**Supplementary Figure S2.** Morphological features of PEI-MNPs. A) Size distribution by number, B) Zeta potential distribution, c) SEM image (magnification: 157 kx, electron high tension: 5 kV, working distance: 8 mm, aperture size: 20  $\mu$ m).



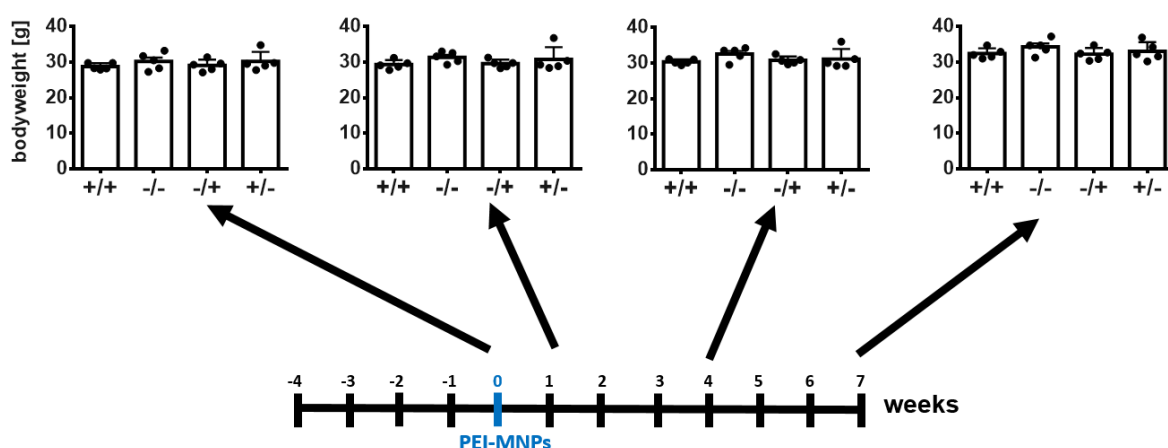
**Supplementary Figure S3:** Time dependent decrease of protein players of the canonical and increase non-canonical NF- $\kappa$ B pathway in the liver of animals with low-grade persistent inflammatory state. A) NF- $\kappa$ B nuclear factors and B) NF- $\kappa$ B regulators. Experimental groups: “+/+”: animals with low-grade persistent inflammation state (subcutaneous injection of zymosan, 3 times 18  $\mu$ g/kg body weight) and with intravenous injection of PEI-MNPs (50  $\mu$ mol Fe/kg body weight, 700  $\mu$ g PEI per mg iron); “-/-”: animals without low-grade persistent inflammation state and without intravenous injection of PEI-MNPs, “-/+”: animals without low-grade persistent inflammation state but with intravenous injection of PEI-MNP. Protein expression was normalized to the housekeeping cellular protein  $\beta$ -actin. Data is plotted as mean and standard deviation of the mean,  $n = 5$  animals per group. \* $p < 0.05$  \*\* $p < 0.01$  (Mann-Whitney U test); W: week



**Supplementary Figure S4.** Time-dependent expression of typical downstream proteins of the NF- $\kappa$ B pathway in the liver of animals with low-grade persistent inflammatory state. Experimental groups: “+/+”: animals with low-grade persistent inflammation state (subcutaneous injection of zymosan, 3 times 18  $\mu$ g/kg body weight) and with intravenous injection of PEI-MNPs (50  $\mu$ mol Fe/kg body weight, 700  $\mu$ g PEI per mg iron); “-/-”: animals without low-grade persistent inflammation state and without intravenous injection of PEI-MNPs, “-/+”: animals without low-grade persistent inflammation state but with intravenous injection of PEI-MNP, “+/-”: animals with low-grade persistent inflammation state but without intravenous injection of PEI-MNP. Protein expression normalized to the housekeeping cellular protein  $\beta$ -actin. Data is plotted as mean and standard deviation of the mean,  $n = 5$  animals per group,  $p < 0.01$  (Mann-Whitney U test), W: week.



**Supplementary Figure S5.** Light images of extracted organs from animals with low-grade persistent inflammatory state in comparison to controls at seven (7) weeks after intravenous application of PEI-MNPs. Experimental groups: “+/+” : animals with low-grade persistent inflammation state (subcutaneous injection of zymosan, 3 times 18 µg/kg body weight) and with intravenous injection of PEI-MNPs (50 µmol Fe/kg body weight, 700 µg PEI per mg iron); “-/-”: animals without low-grade persistent inflammation state and without intravenous injection of PEI-MNPs, “-/+”: animals without low-grade persistent inflammation state but with intravenous injection of PEI-MNP. M: muscle, Bo: Bones, Sk: skin, Lu: lungs, Sp: spleen, H: heart, Br: brain, Li: liver, K: kidney, A: adrenal glands, O: ovary and uterus.



**Supplementary Figure S6.** Body weight of animals with low-grade persistent inflammatory state after intravenous application of PEI-MNPs in comparison to controls. Experimental groups: “+/+” : animals with low-grade persistent inflammation state (subcutaneous injection of zymosan, 3 times 18  $\mu\text{g/kg}$  body weight) and with intravenous injection of PEI-MNPs (50  $\mu\text{mol Fe/kg}$  body weight, 700  $\mu\text{g}$  PEI per mg iron) “-/-”: animals without low-grade persistent inflammation state and without intravenous injection of PEI-MNPs, “-/+”: animals without low-grade persistent inflammation state but with intravenous injection of PEI-MNP. Data is plotted as mean and standard deviation of the mean,  $n = 5$  animals per group.