Supporting Information

Lashof-Sullivan et al. 10.1073/pnas.1406979111

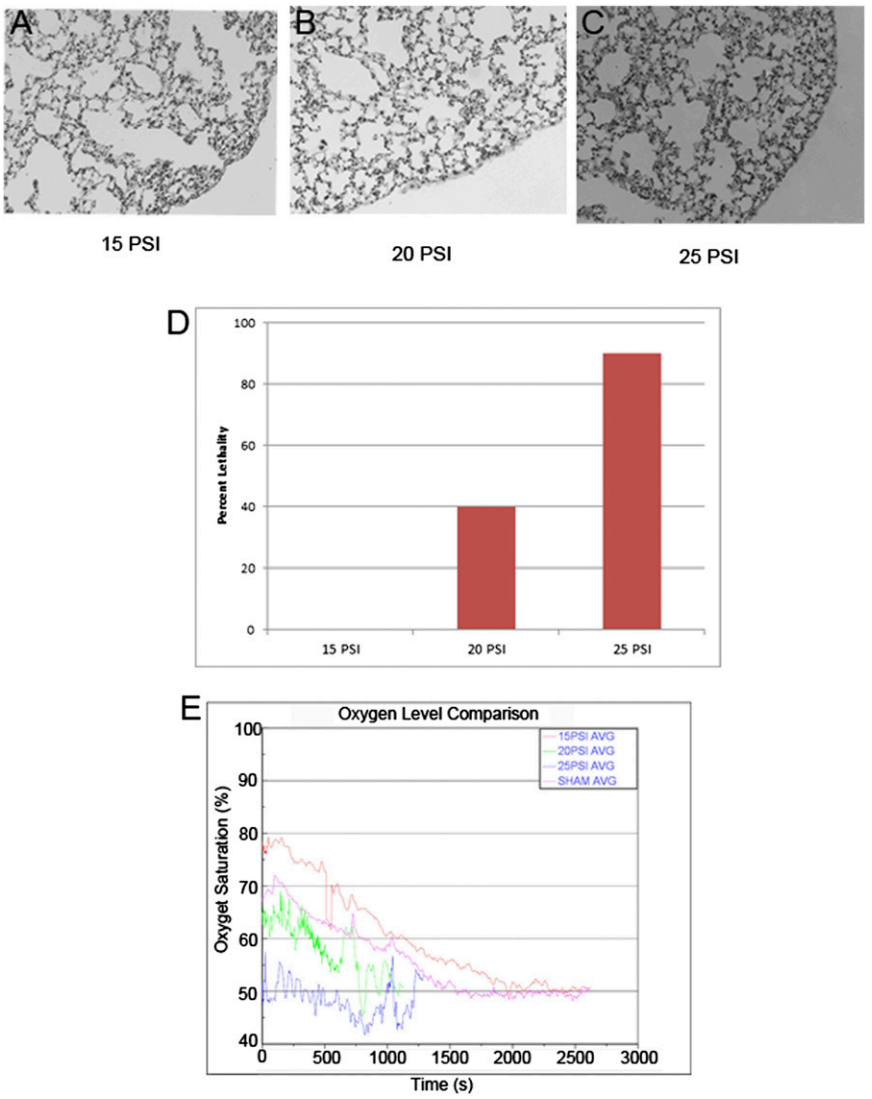

Fig. S1. Assessment of degree of injury and lethality as a result of blast trauma at 15, 20, and 25 psi overpressures. (*A*) H&E-stained lung section from a 15-psi blasted animal showing a limited number of red blood cells. (*B*) H&E-stained lung section from a 20-psi blasted animal showing red blood cells throughout the tissue. (*C*) H&E-stained lung section from a 25-psi blasted animal showing extensive red blood cells through the tissue. (*D*) Quantification of lethality as a result of pressure. (*E*) Oxygen saturation curves as a function of blast pressure. As the pressure increases, oxygen saturation decreases, which closely correlates with the degree of lung injury.

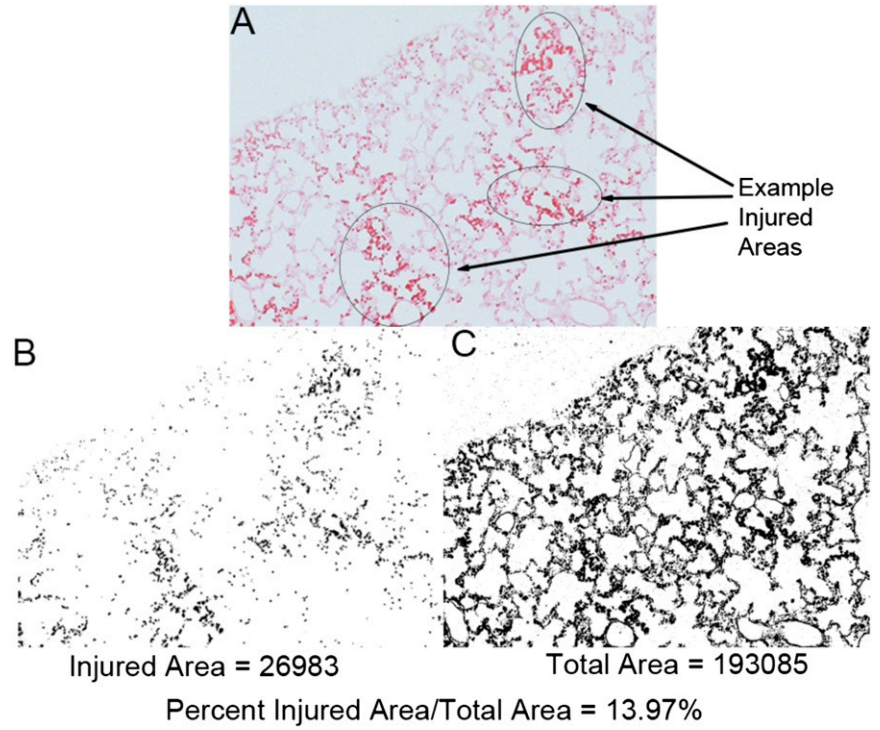

Fig. S2. Quantification of lung injury. (*A*) Eosin-stained section of lung tissue following blast trauma. (*B* and C) Image segmented using thresholding in ImageJ to determine the area of injury (i.e., quantity of red blood cells) (*B*) and overall area of tissue positive for eosin (*C*). This ratio is then calculated and reported as the fraction of lung injury.

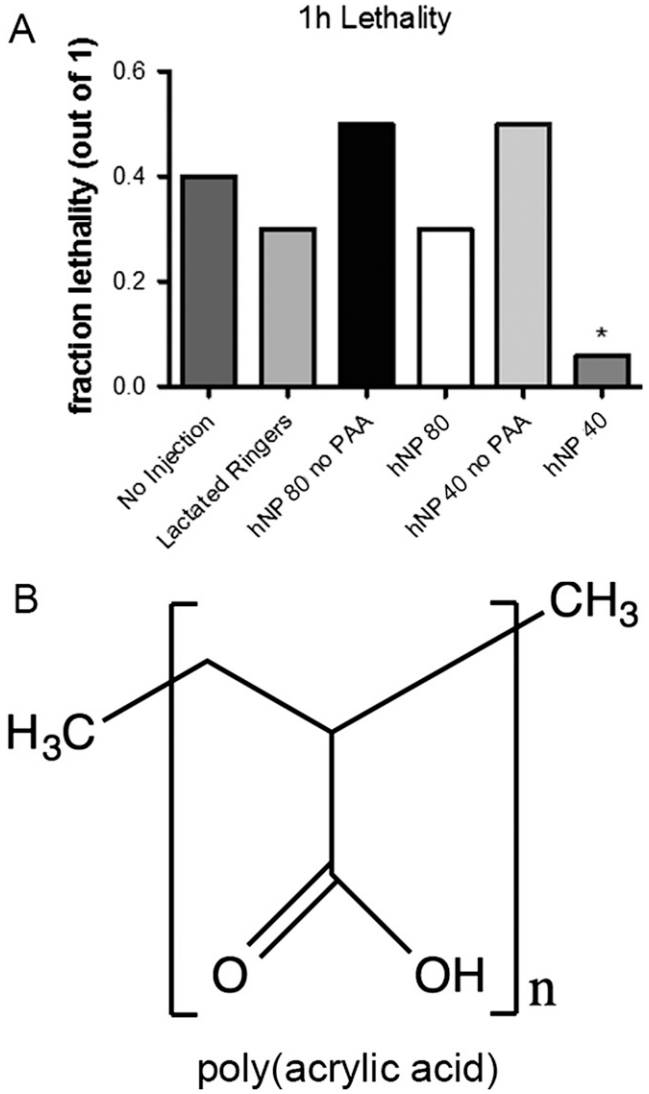

Fig. S3. The impact of PAA and dosing on survival following blast trauma. (*A*) Lethality for a small pilot study looking at dose and the use of PAA. PAA did not appear to have an effect on the survival following administration in the small number of animals tested, which was encouraging because PAA is an important additive to facilitate resuspension of the particles. We also looked at dose, and in the first set of animals, found that a dose of 40 mg/kg (hNP 20) was optimal for reducing lethality. (*B*) Structure of PAA. The carboxyl group complexes with the PEG on the nanoparticles and facilitates collection of the nanoparticles and, ultimately, resuspension.

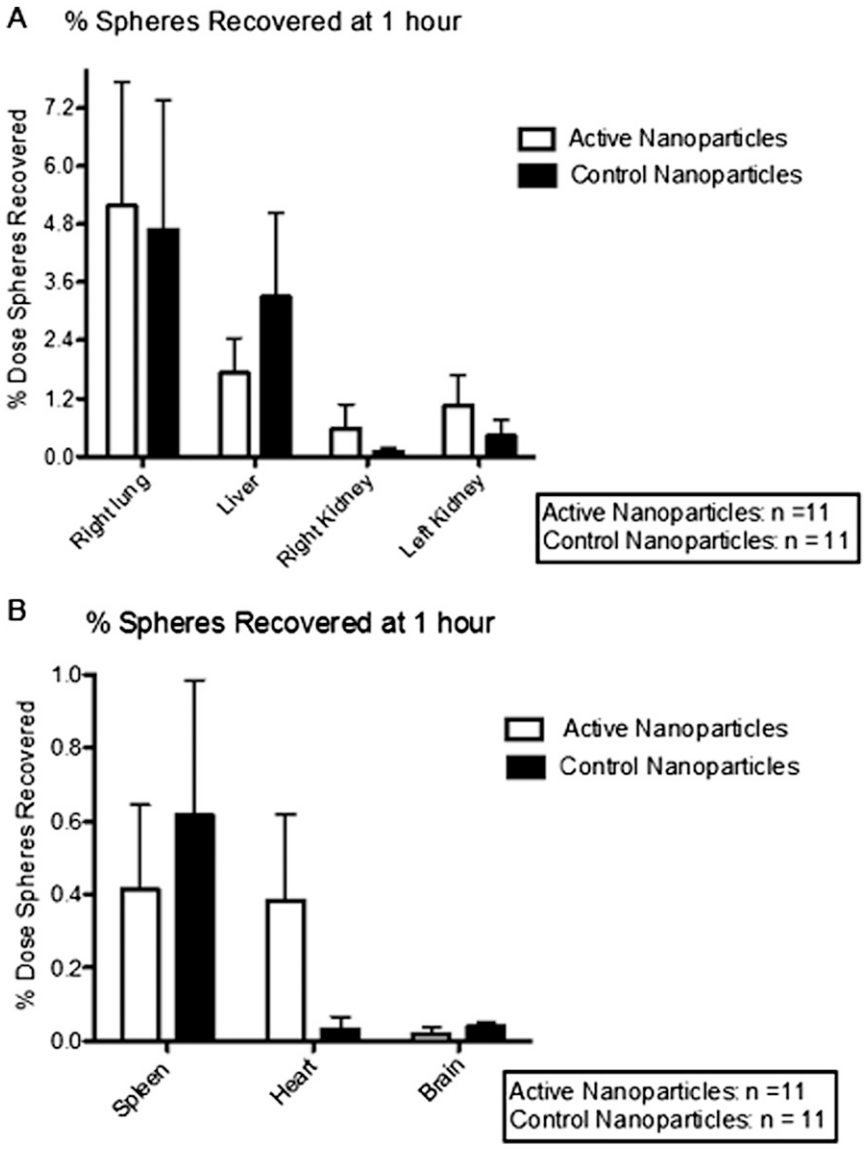

Fig. S4. Biodistribution of hemostatic nanoparticles or controls following blast trauma. (*A*) Biodistribution in the lung, liver, and kidneys, the tissues exhibiting the greatest hemorrhaging in the initial blast study. Not surprisingly, these tissues had the greatest number of particles present at 1 h postadministration. Error bars denote SEM. (*B*) Particles were also found in the spleen, heart, and brain. No particles were found in the other organs, including the GI tract and the spinal cord. Error bars denote SEM.

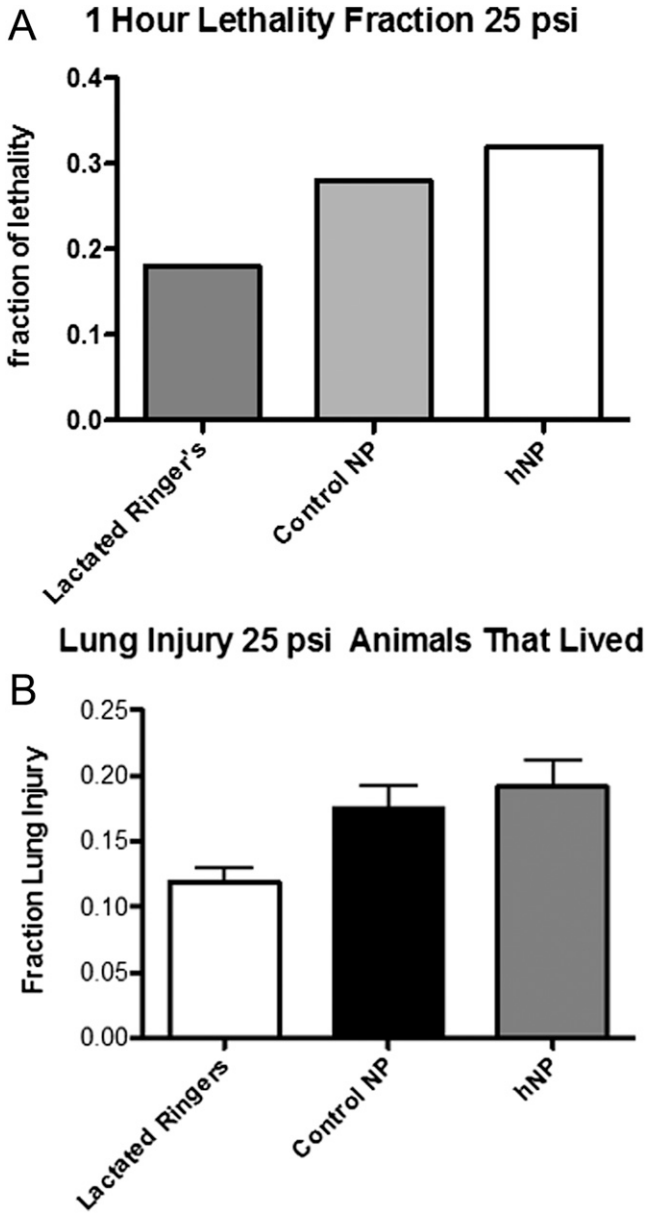

Fig. S5. Lethality as a function of hemostatic nanoparticles at 25 psi. (*A*) There was no difference between the groups at 25 psi. This is not surprising, considering the extensive amount of tissue damage at this blast pressure. (*B*) Quantification of lung damage when the hemostatic nanoparticles did not lead to improvement. The nanoparticles improved survival at 20 psi but were not effective in more severe cases, such as represented by the 25-psi blast trauma. Error bars denote SEM.