**SUPPORTING INFORMATION**

Dual Peptide Nucleic Acid- and Peptide-functionalized Shell Crosslinked Nanoparticles Designed to Target mRNA toward the Diagnosis and Treatment of Acute Lung Injury

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Supplementary Tables and Figures.

Table S1. MALDI data for PNAs

| | | Calc. Mass (M+1) | Obsvd. Mass (M+1) |
|---|---|---|---|
| iNOS-240 | 5'- TGT CCT TTT CCT CTT TCA-K4 -3' | 5267.3 | 5268.6 |
| iNOS-240mm | 5'- TGT CCT CCT TTT CTT TCA-K4 -3' | 5267.3 | 5268.5 |
| iNOS-480 | 5'- TGA AAT CCG ATG TGG CCT-K4-3' | 5427.3 | 5428.3 |
| iNOS-480mm | 5'-TAG AAT CCA GTG GTG CCT-K4- 3' | 5427.3 | 5432.5 |

Table S2. MALDI data for maleimide-PNAs

| | | Calcd. Mass (M+1) | Obsvd. Mass (M+1) |
|---|---|---|---|
| iNOS-240 | 5'-Maleimide-TGT CCT TTT CCT CTT TCA-3 | 4906.7 | 4909.2 |
| iNOS-240mm | 5'-Maleimide- TGT CCT CCT TTT CTT TCA-3 | 4906.7 | 4906.9 |
| iNOS-480 | 5'-Maleimide- TGA AAT CCG ATG TGG CCT-3 | 5063.8 | 5064.0 |
| iNOS-480 mm | 5'-Maleimide- TAG AAT CCA GTG GTG CCT-3 | 5063.8 | 5067.3 |

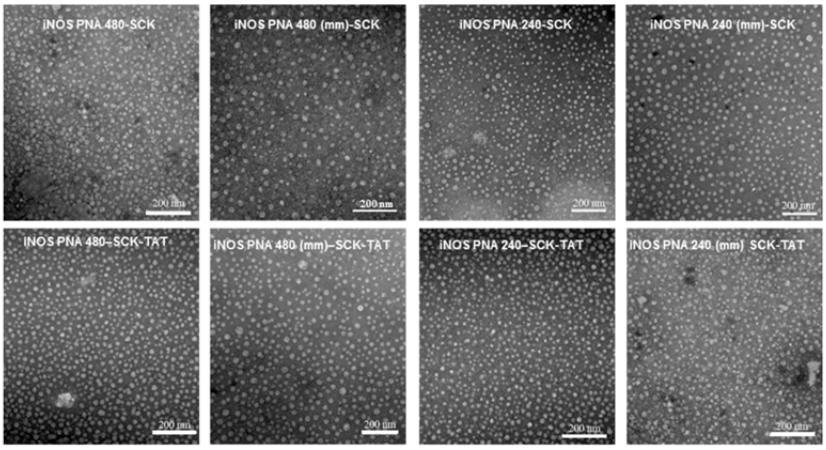


**Figure S1.** TEM images of iNOS PNA-SCK conjugates with and without TAT.

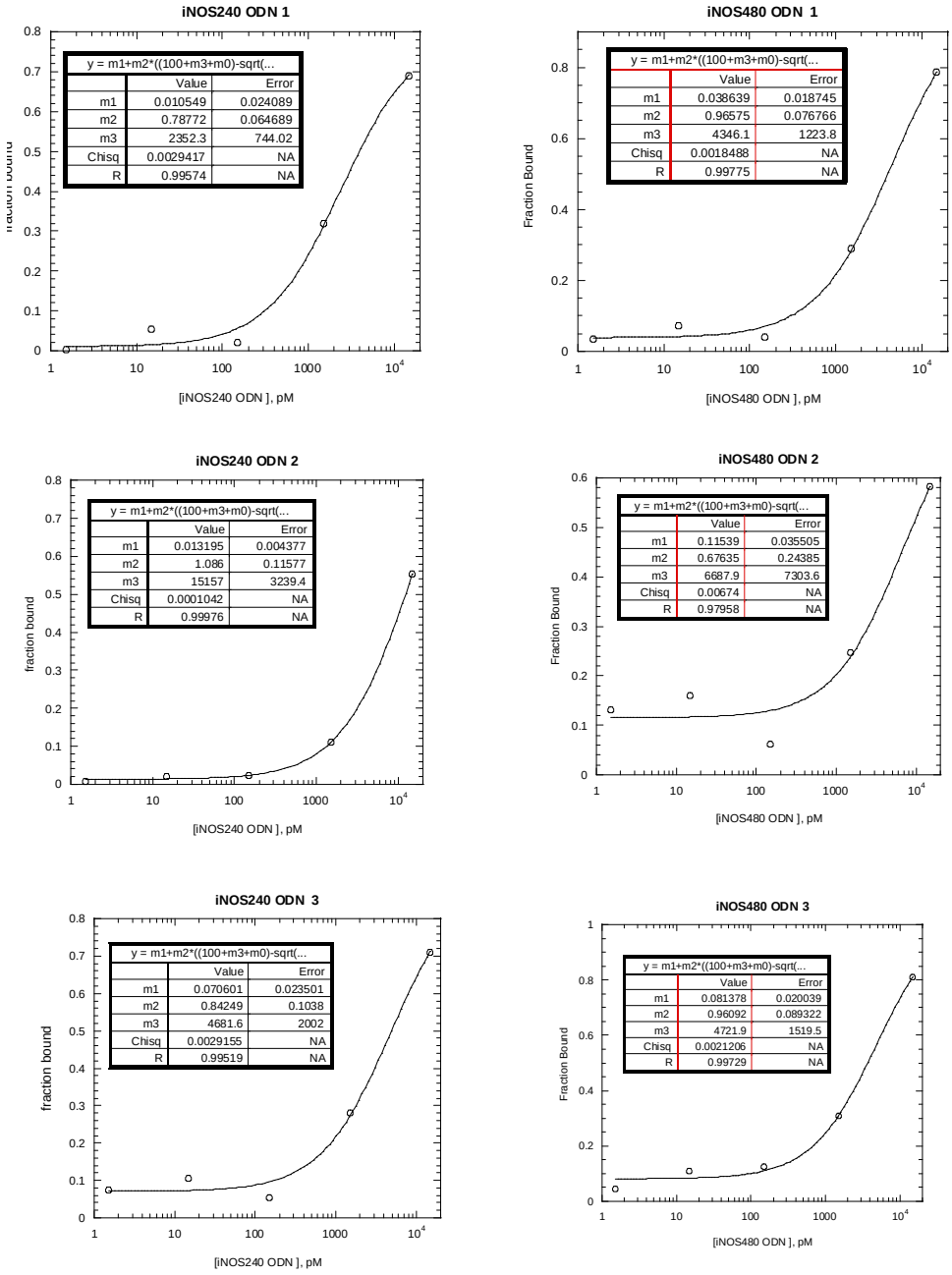


**Figure S2.** Determination of ODN 240 and 480 binding affinity for iNOS mRNA. Fits of fraction ODN bound to the iNOS mRNA from a Dynabead binding assay to equation 1) as described in the experimental section. The concentration of ODN was 100 pM.

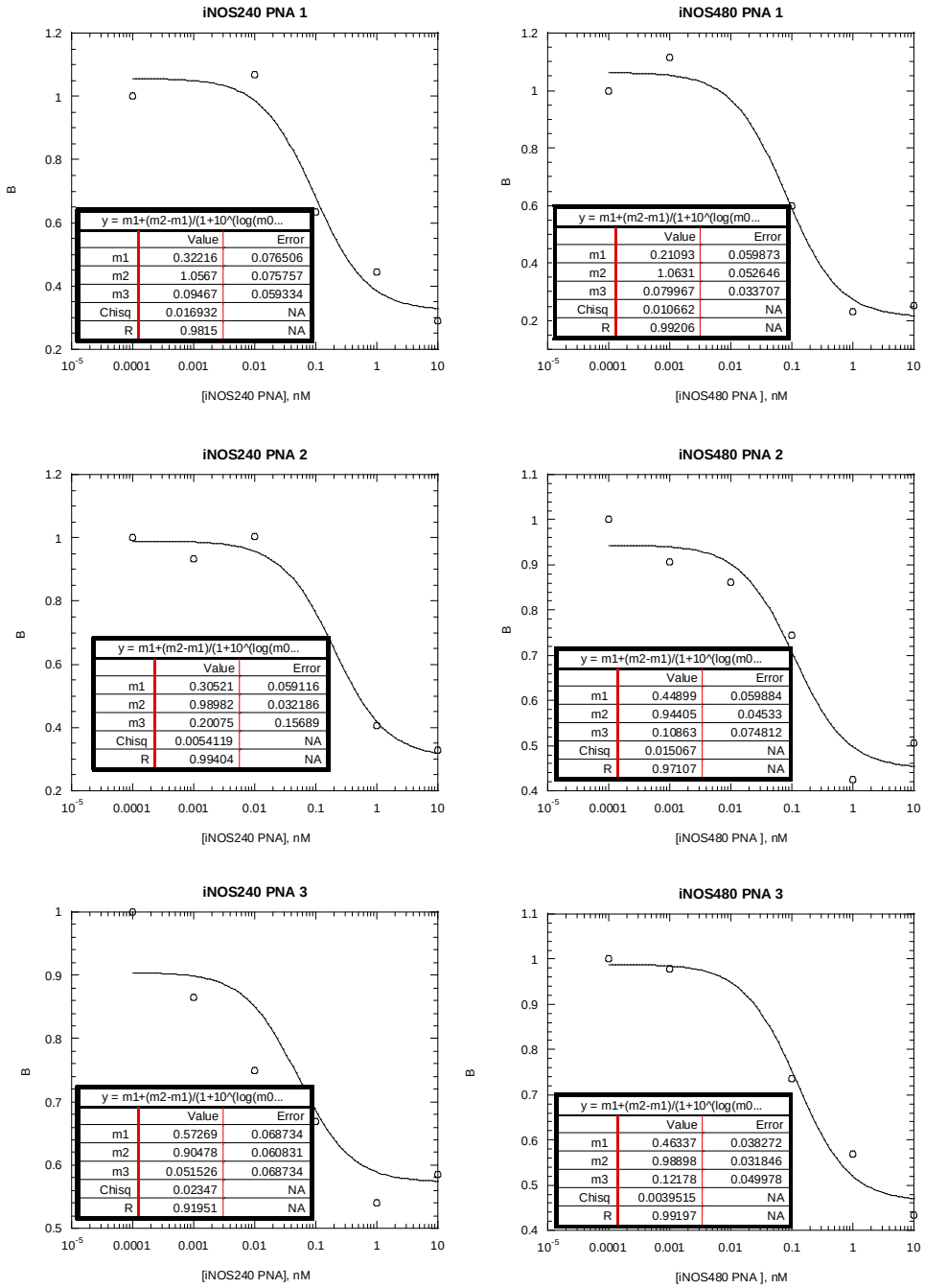


**Figure S3.** Determination of PNA 240 and 480 binding affinity for iNOS mRNA through a Dynabead competition assay as described in the experimental section. The fraction of mRNA (10 pM) bound to 5'-radiolabeled ODN (1 nM) as a function of PNA concentration (nM) was fit to equation 2) to determine the $IC_{50}$. The $K_d$ for PNA binding was then determined from the $K_d$ for the ODN and the $IC_{50}$ for the PNA according to equation 3).

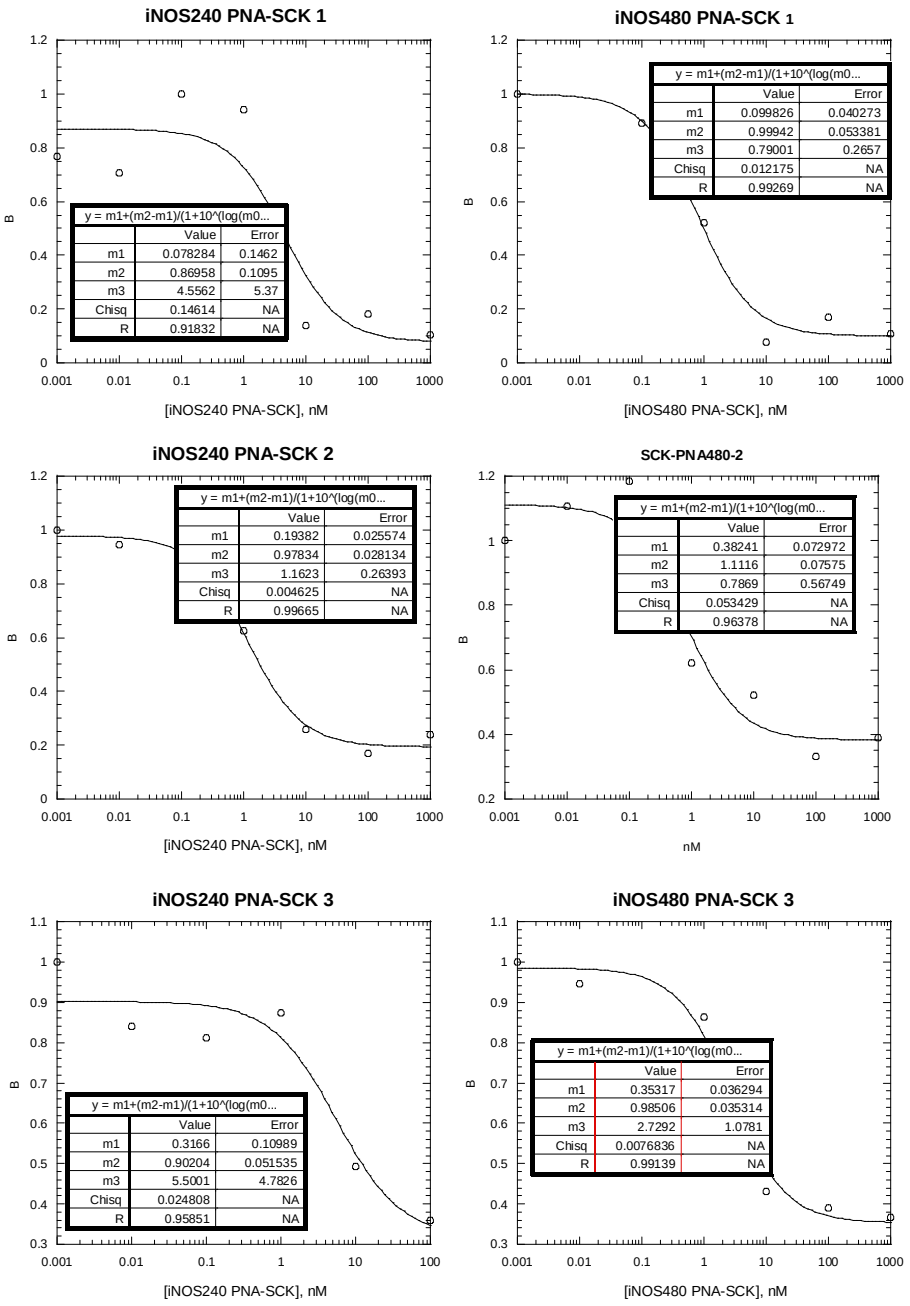


**Figure S4**. Determination of SCK-PNA 240 and 480 binding affinity for iNOS mRNA through a Dynabead competition assay as described in the experimental section. The fraction of mRNA (10 pM) bound to 5'-radiolabeled ODN (1 nM) as a function of SCK-PNA concentration (nM) was fit to equation 2) to determine the $IC_{50}$. The $K_d$ for SCK-PNA binding was then determined from the $K_d$ for the ODN and the $IC_{50}$ for the SCK-PNA according to equation 3).

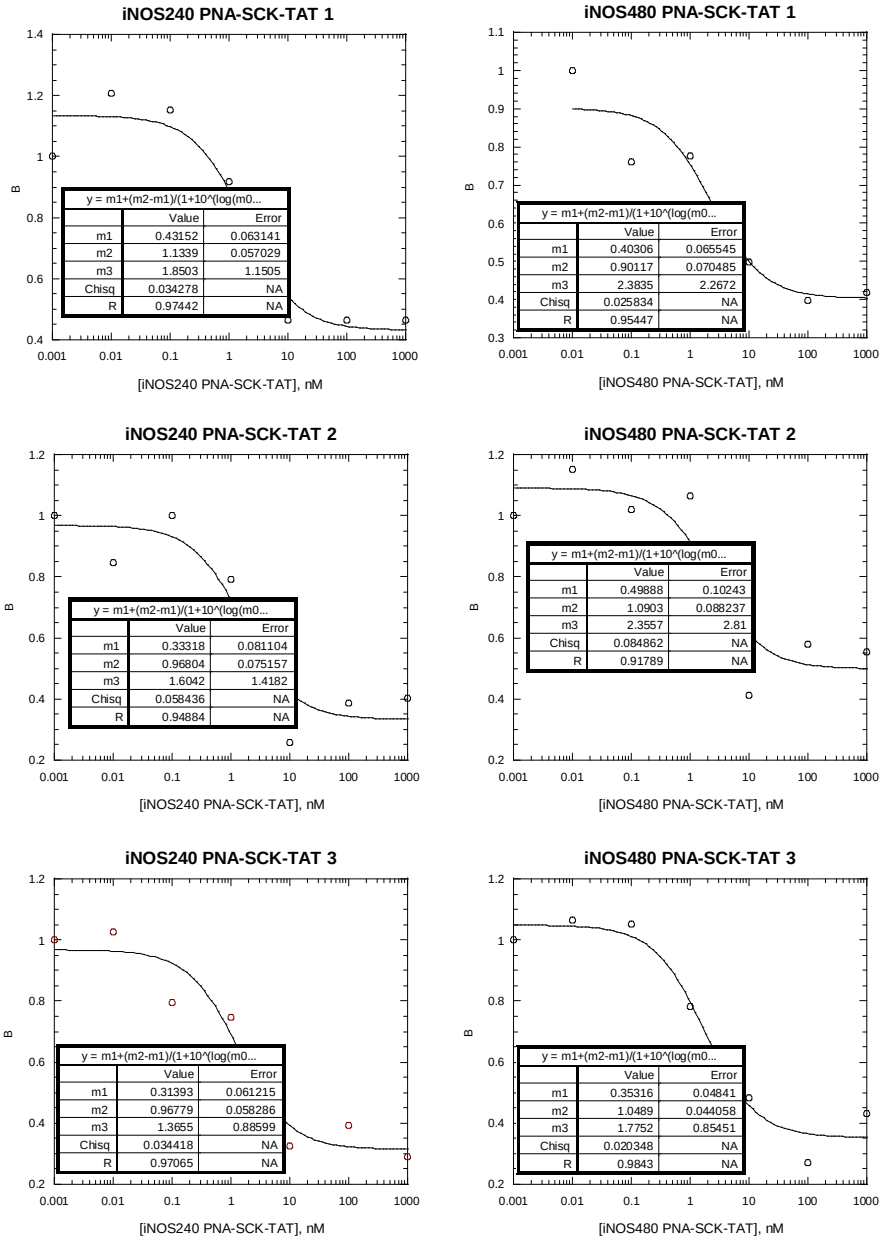


**Figure S5.** Determination of TAT-SCK-PNA 240 and 480 binding affinity for iNOS mRNA through a Dynabead competition assay as described in the experimental section. The fraction of mRNA (10 pM) bound to 5'-radiolabeled ODN (1 nM) as a function of TAT-SCK-PNA concentration (nM) was fit to equation 2) to determine the IC50. The $K_d$ for TAT-SCK-PNA binding was then determined from the $K_d$ for the ODN and the IC50 for the TAT-SCK-PNA according to equation 3).