Supporting Information

Title: Preformed protein corona on silica nanoparticles enhances exocytosis

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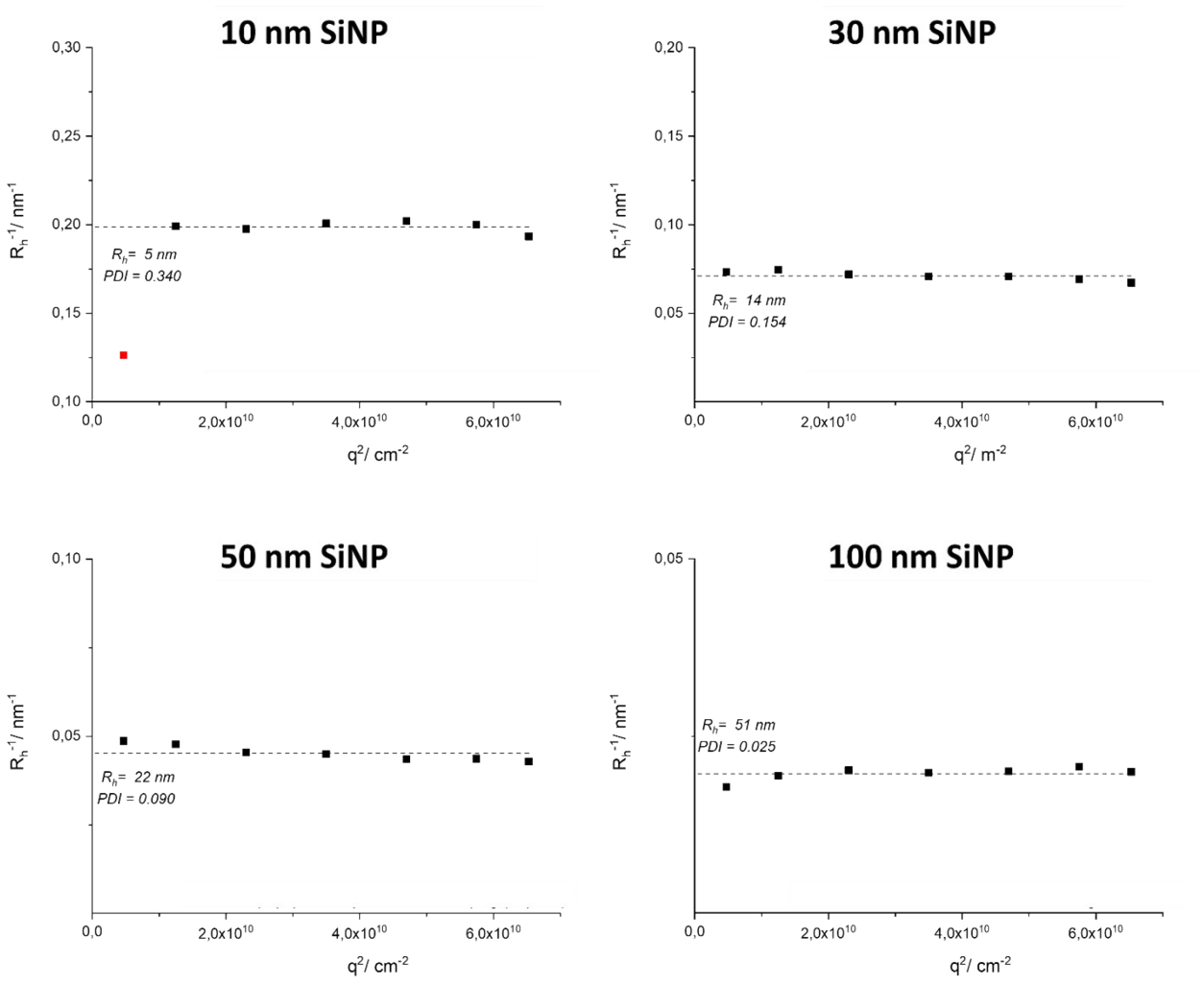

Figure S1. Hydrodynamic radii of SiNPs determined by multi-angle DLS in water at 20°C. The PDI was derived from 90° measurements. The red data point was not taken into account for analysis.

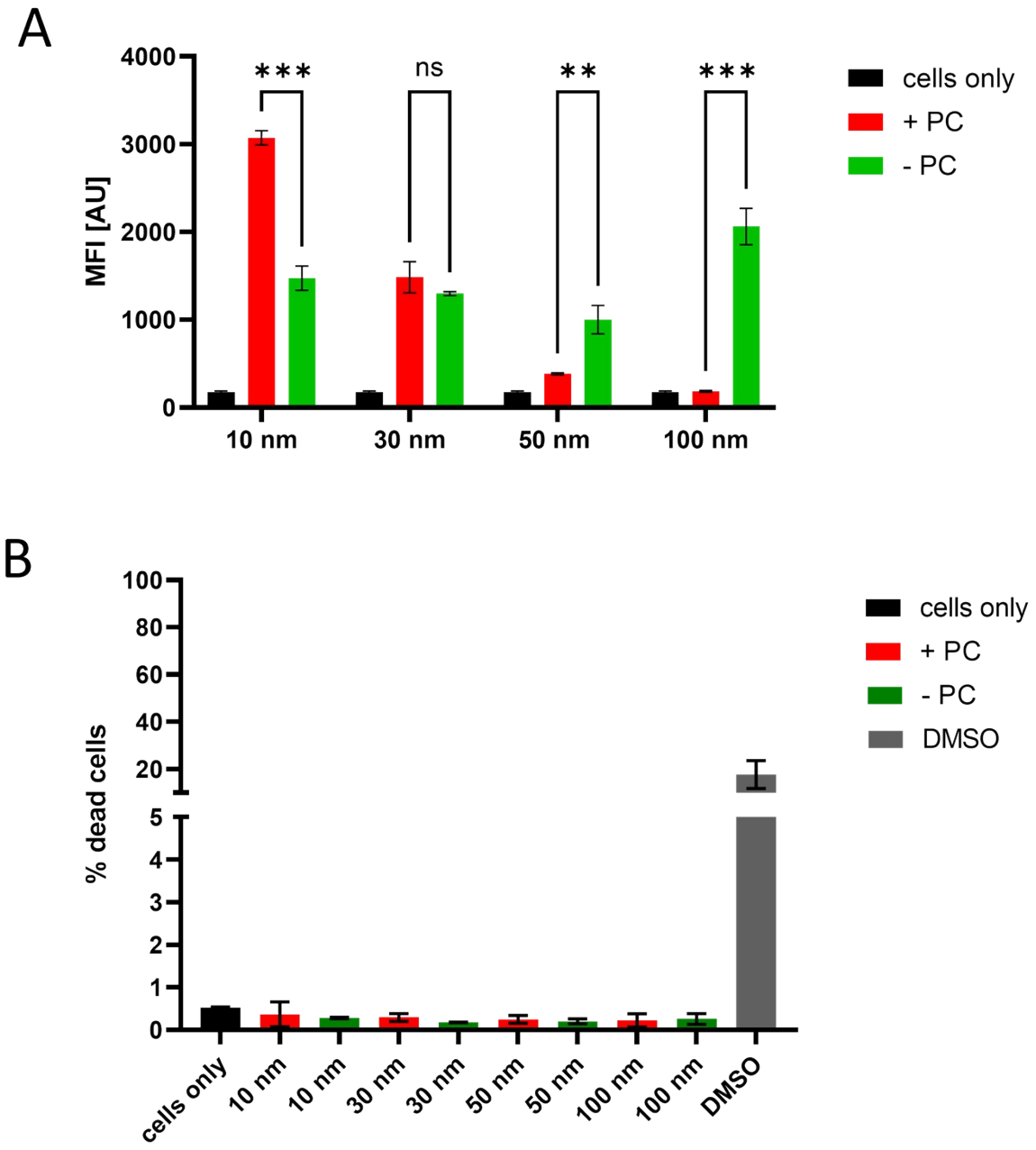

Figure S2. Uptake of different-sized SiNPs in the presence and absence of a protein corona (PC). A Flow cytometry measurement of 10 nm, 30 nm, 50 nm, and 100 nm SiNPs uptake in HCT 116 cells after 2 h of incubation. Shown are the means and standard deviations of the MFI of all cells. For statistical analysis, multiple unpaired t tests were performed. ns = not significant, ** $p < 0.002$, *** $p < 0.001$ ($n = 3$). B Cell viability after 2 h of incubation with SiNPs in the absence and presence of a protein corona as a percentage of dead cells. Mean and standard deviation of $n = 3$.

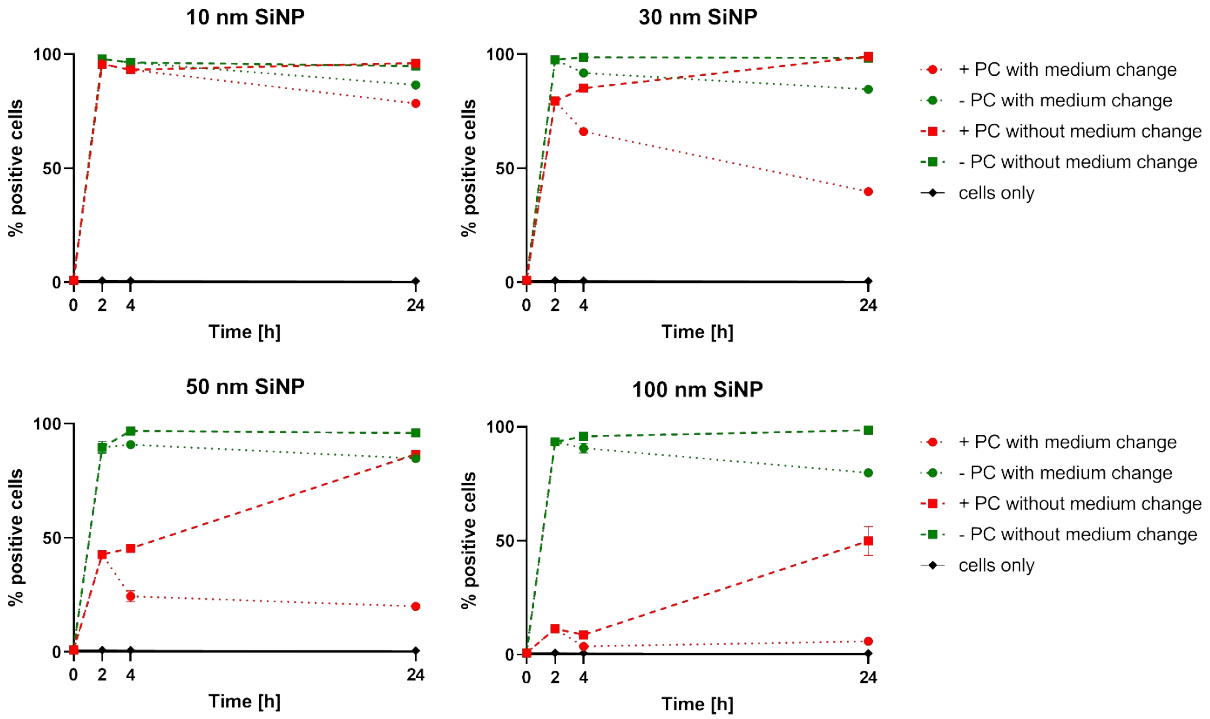

Figure S3. Exocytosis of different-sized SiNPs in the presence and absence of a protein corona. HCT 116 cells were incubated with SiNPs with or without pre-adsorbed protein corona for 2 h. Subsequently, the SiNPs were removed and the intracellular particle amount after 4 h and 24 h was measured by flow cytometry. Additionally, cells were incubated with SiNPs for 2 h, 4 h, and 24 h without medium change. The percentage of gated cells is shown. The means and standard deviation of $n = 3$ are depicted. Lines are guide to the eye only.

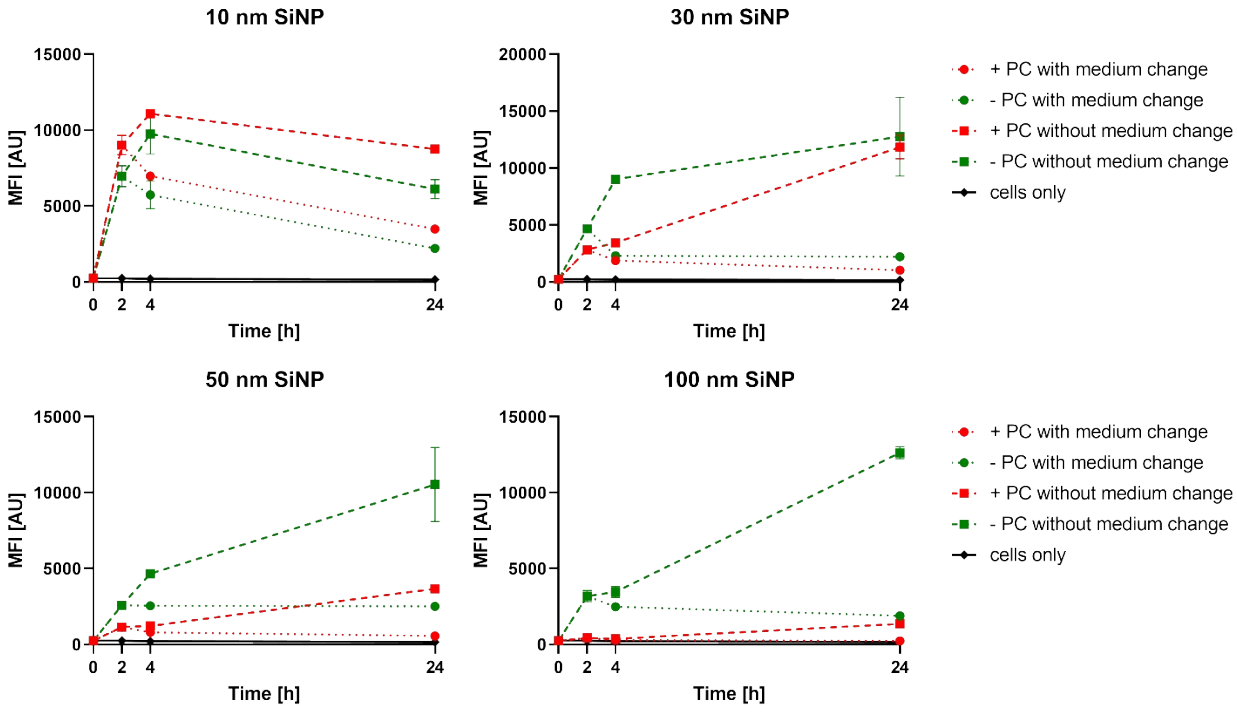

Figure S4. Exocytosis of different-sized SiNPs in the presence and absence of a protein corona. HCT 116 cells were incubated with SiNPs with or without pre-adsorbed protein corona for 2 h. Subsequently, the SiNPs were removed and the intracellular particle amount after 4 h and 24 h was measured by flow cytometry. Additionally, cells were incubated with SiNPs for 2 h, 4 h, and 24 h without medium change. Shown are the means and standard deviations of the MFI of all cells (n = 3). Lines are guide to the eye only.

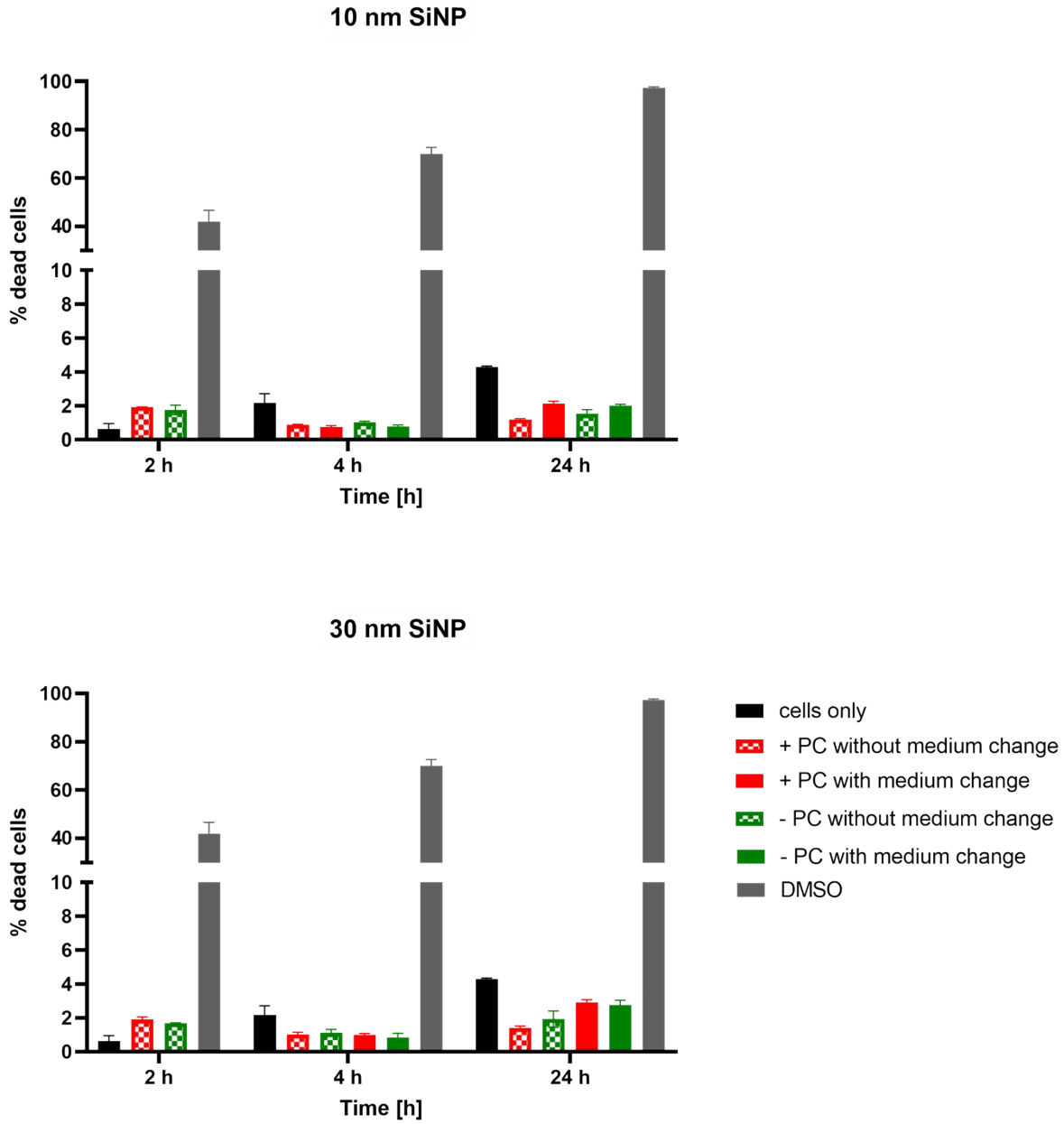

Figure S5. Cell viability after incubation of HCT 116 cells with 10 and 30 nm SiNPs in the absence and presence of a protein corona as percentage of dead cells. Mean and standard deviation of n = 3.

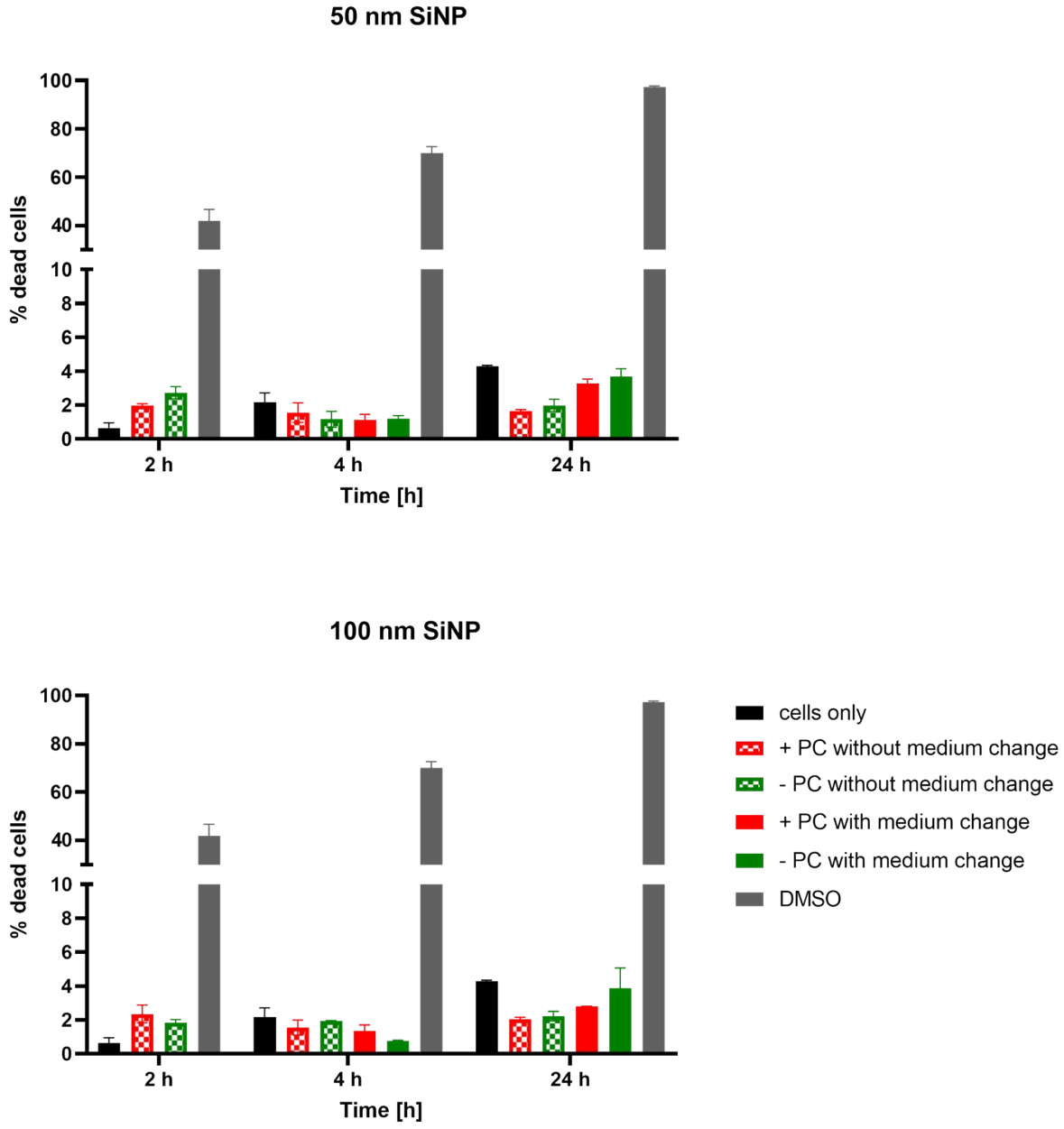

Figure S6. Cell viability after incubation of HCT 116 cells with 50 and 100 nm SiNPs in the absence and presence of a protein corona as a percentage of dead cells. Mean and standard deviation of $n = 3$.

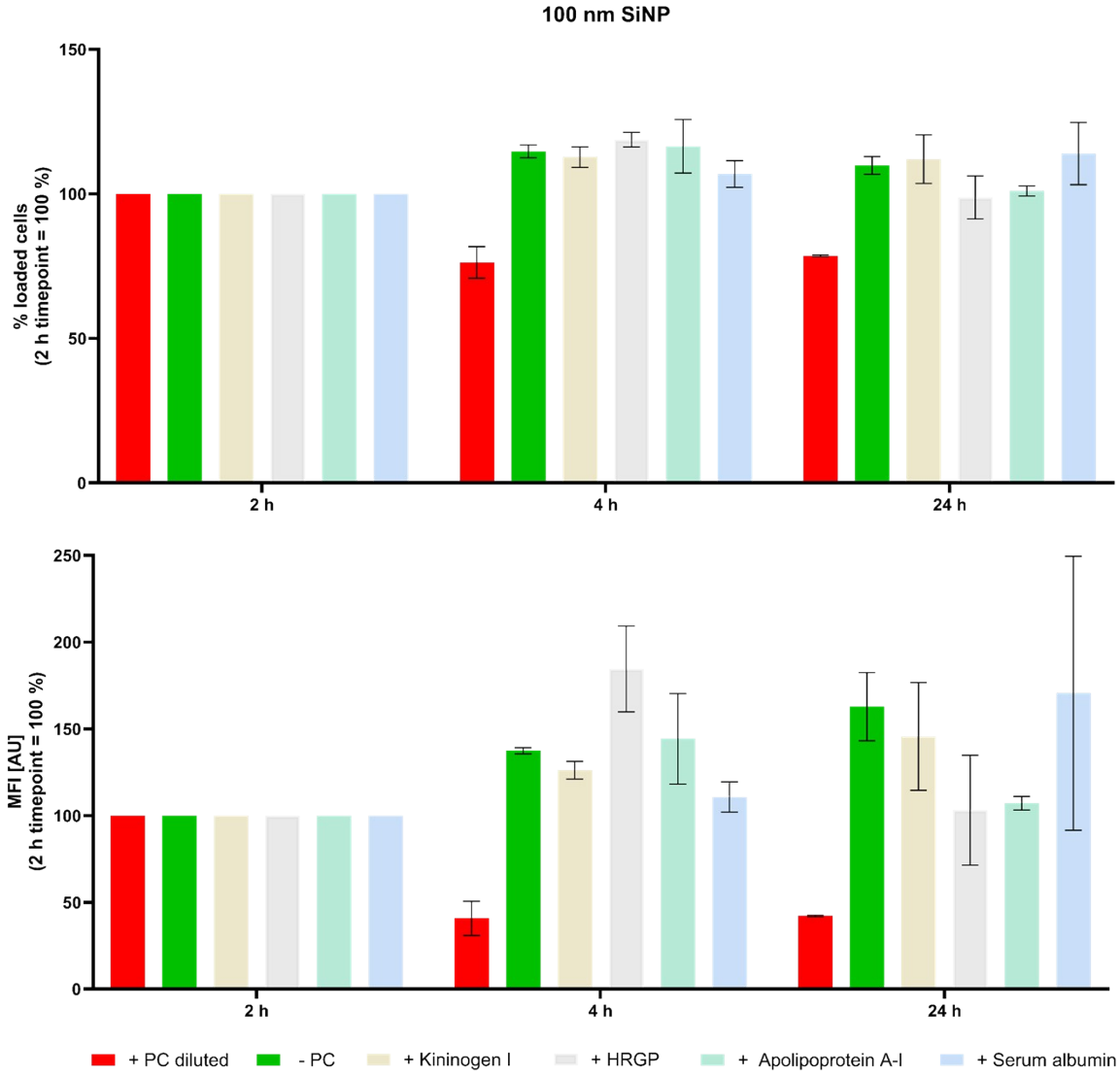

Figure S7. Exocytosis of 100 nm SiNPs in the presence and absence of a human plasma protein corona (PC) or different single protein coatings. HCT 116 cells were incubated for 2 h with SiNP with a pre-adsorbed human plasma protein corona, pristine SiNP or SiNP pre-incubated in single protein coating solutions. Here, 100 µg mL^{-1} protein was used for the single protein coating solutions and human plasma was diluted to the same concentration (indicated as + PC diluted). Subsequently, the SiNPs were removed, the cells washed and the remaining intracellular particle amount after 4 h and 24 h was measured by flow cytometry. The percentage of loaded cells relative to the loading after 2 h of particle uptake is shown. The means and standard deviations of n = 3 are depicted.

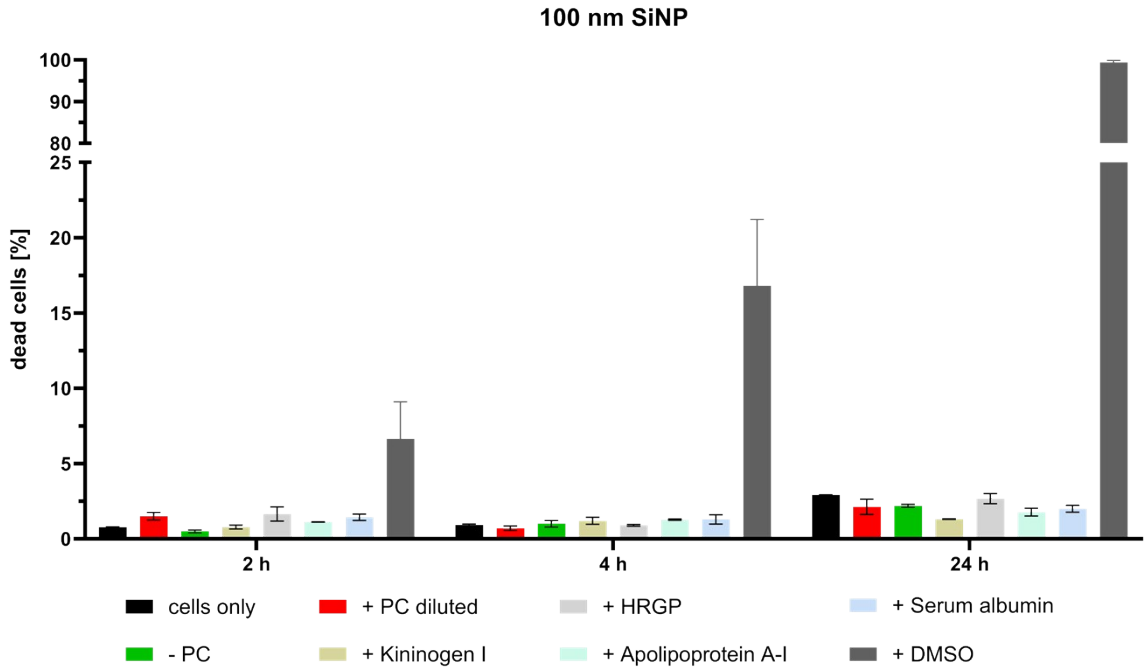

Figure S8. Cell viability after incubation of HCT 116 cells with 100 nm SiNPs in the absence and presence of a protein corona or the presence of single protein coatings as indicated as percentage of dead cells. Here, 100 µg mL^{-1} protein was used for the single protein coating solutions and human plasma was diluted to the same concentration (indicated as + PC diluted). Mean and standard deviation of n = 3.