Nanoporous Superhydrophobic Coatings that Promote the Extended Release of Water-Labile Quorum Sensing Inhibitors and Enable Long-Term Modulation of Quorum Sensing in *Staphylococcus aureus*

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Supporting Information

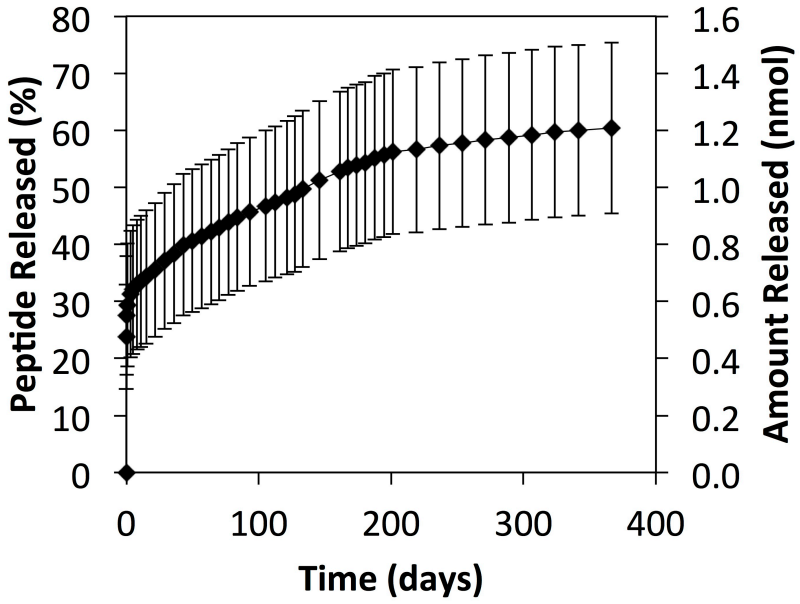

Figure S1. Plot showing the release of peptide $\mathbf{1}_{FL}$ from substrates coated with peptide-loaded superhydrophobic PEI/PVDMA multilayers containing 2.0 nmol of peptide (an amount twice as high as that contained in the films used to generate the results shown in Figure 5A of the main text) as a function of time incubated in PBS buffer. Results are shown as the total amount of peptide released (nmol) over time and as a percentage of the total amount of peptide loaded. The experiment was terminated after 366 days, the point at which substantial delamination of the films from their underlying substrates was observed to begin (see main text).

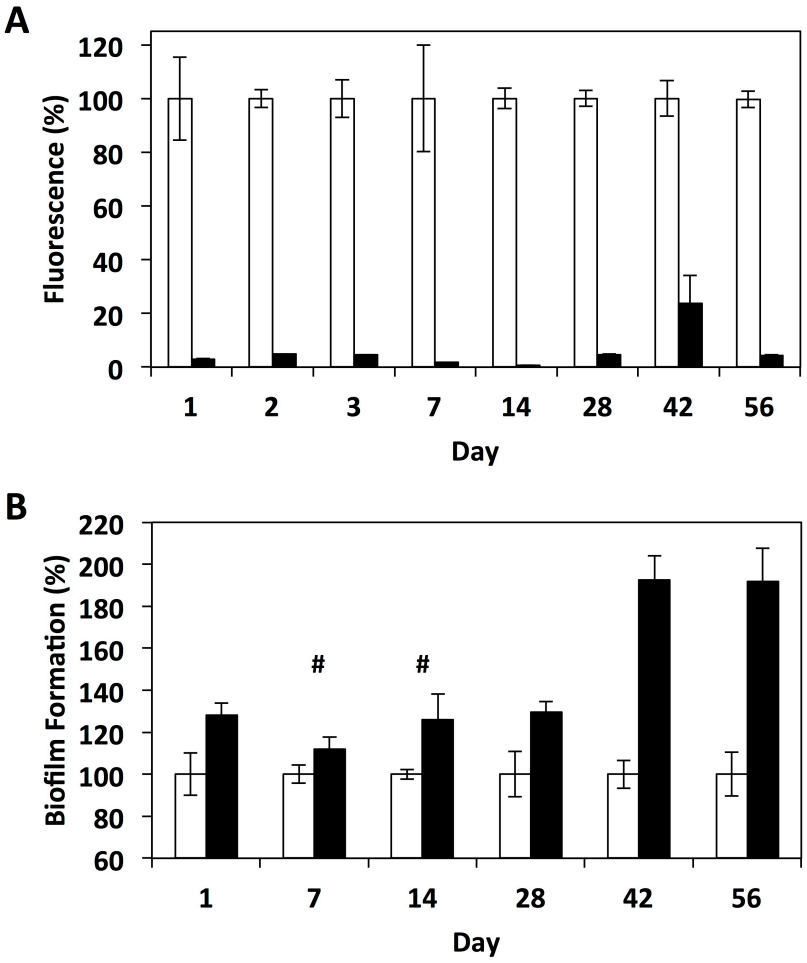

Figure S2. Companion to Figure 6 of the main text showing: Plots of (A) fluorescence versus time and (B) biofilm formation versus time, normalized to controls, for the *S. aureus* GFP reporter strain (A) and wild-type *S. aureus* (B) incubated with peptide-loaded coatings during extended challenge-and-hold experiments. Black bars show results for experiments using peptide-loaded films; white bars show results for control experiments using non-peptide-loaded films. All experiments were performed in replicates of four; # indicates lack of significance ($p > 0.05$). These experiments were conducted in a manner that was otherwise equivalent to that of experiments shown in Figure 6 and described in the main text, but on different days using different samples and bacterial cultures. These data are included to show the results of additional replicates and highlight the potential effects of physical film delamination on inhibition of GFP and on biofilm formation. As described in the main text, film delamination was observed at days 42 and 56 in the experiments shown in Figure 6 of the main text, but film delamination was not observed during the experiments shown here.

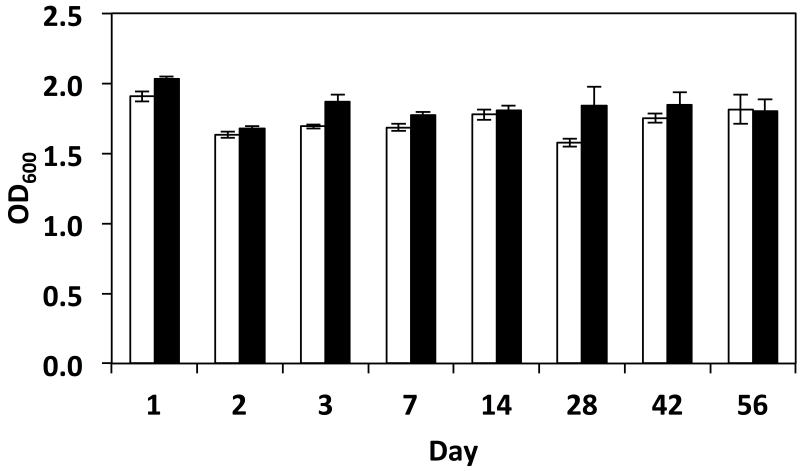

Figure S3. Plot of OD_{600} versus time recorded during GFP reporter strain experiments shown in Figure 6 in the main text. Black bars show results for experiments using peptide-loaded films; white bars show results for control experiments using non-peptide-loaded films. Experiments were performed in replicates of four. These data are representative, in general, of the bacterial cell density in the GFP reporter assays, and are included to demonstrate (i) that neither peptide **1** nor the superhydrophobic films themselves are biocidal and (ii) that the decreases in GFP production observe in Figure 6 of the main text are not a result of decreases in bacterial cell density.

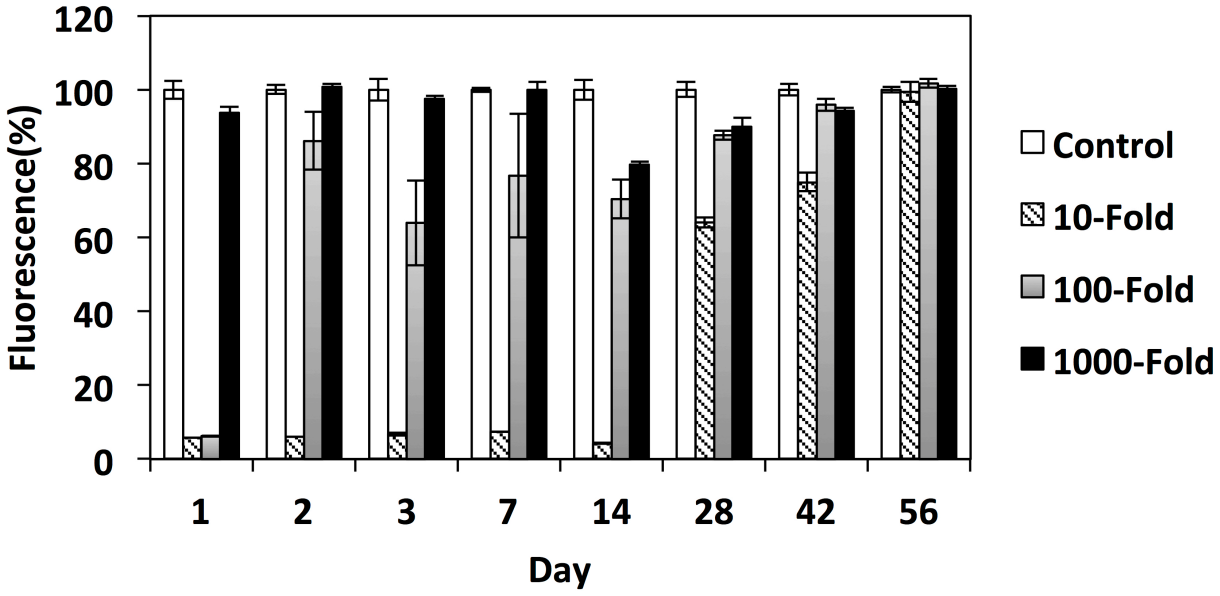

Figure S4. Plot of percent fluorescence versus time, relative to controls, using 10-, 100-, and 1000-fold dilutions of release media collected at each time point during the incubation of peptide-loaded coatings in PBS. This assay was conducted by releasing peptide into PBS and then diluting those samples into media containing the *S. aureus* GFP reporter strain. Aliquots were removed from media and added to assay culture media at the indicated dilution level. All experiments were performed in replicates of four. The 1:10 condition is statistically different from controls ($p < 0.05$) on all days except day 56. The 1:100 condition is statistically different from controls ($p < 0.05$) on all days except days 2,7, 42, and 56. The 1:1000 condition is statistically different from controls ($p < 0.05$) only on days 14, 28, and 42.