Supporting Information

Visualization of Lipid Membrane Reorganization Induced by a Pore-Forming Toxin Using High-Speed Atomic Force Microscopy

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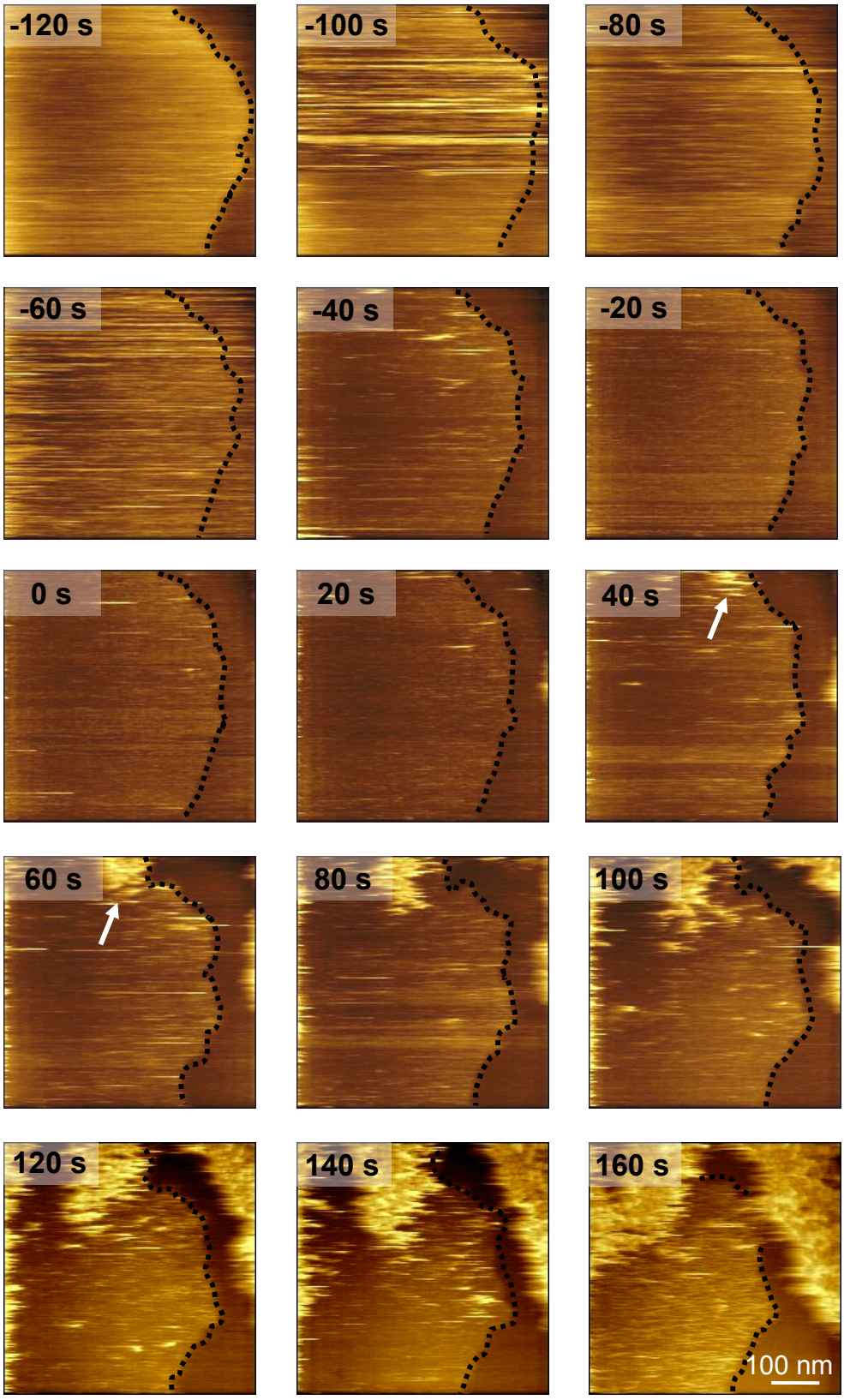

Figure S1. Assembling of lysenin on SM/Chol/DOPC (2:1:2) membrane. The images were extracted from Movie 1A, recorded at a scan rate of 1 frame/s. “0 s” refers to the image at “0 s” in Figure 1B. Between -120 s and 20 s the phase boundary was almost stable. At 40 s it started to fluctuate with the appearance of a group of lysenin oligomers, indicated by the arrow.

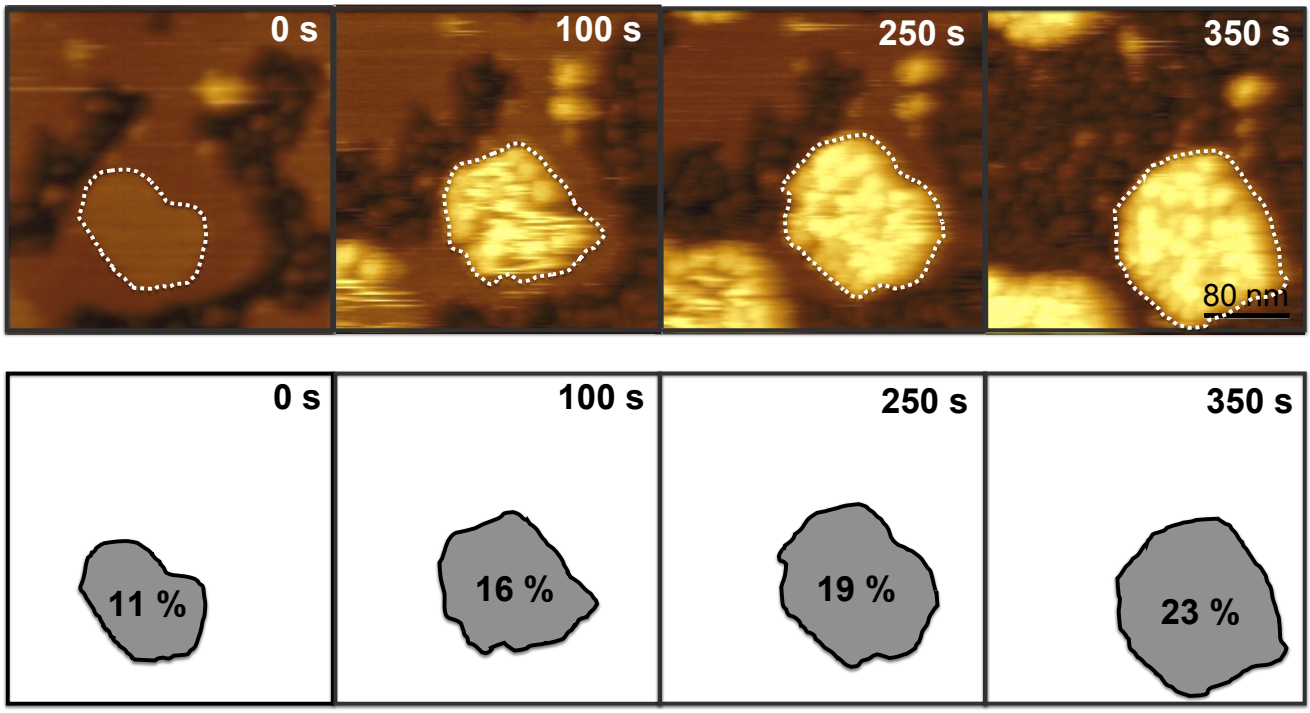

Figure S2. Time-lapse AFM images showing the expansion in the membrane area on which the hcp assembly formed.

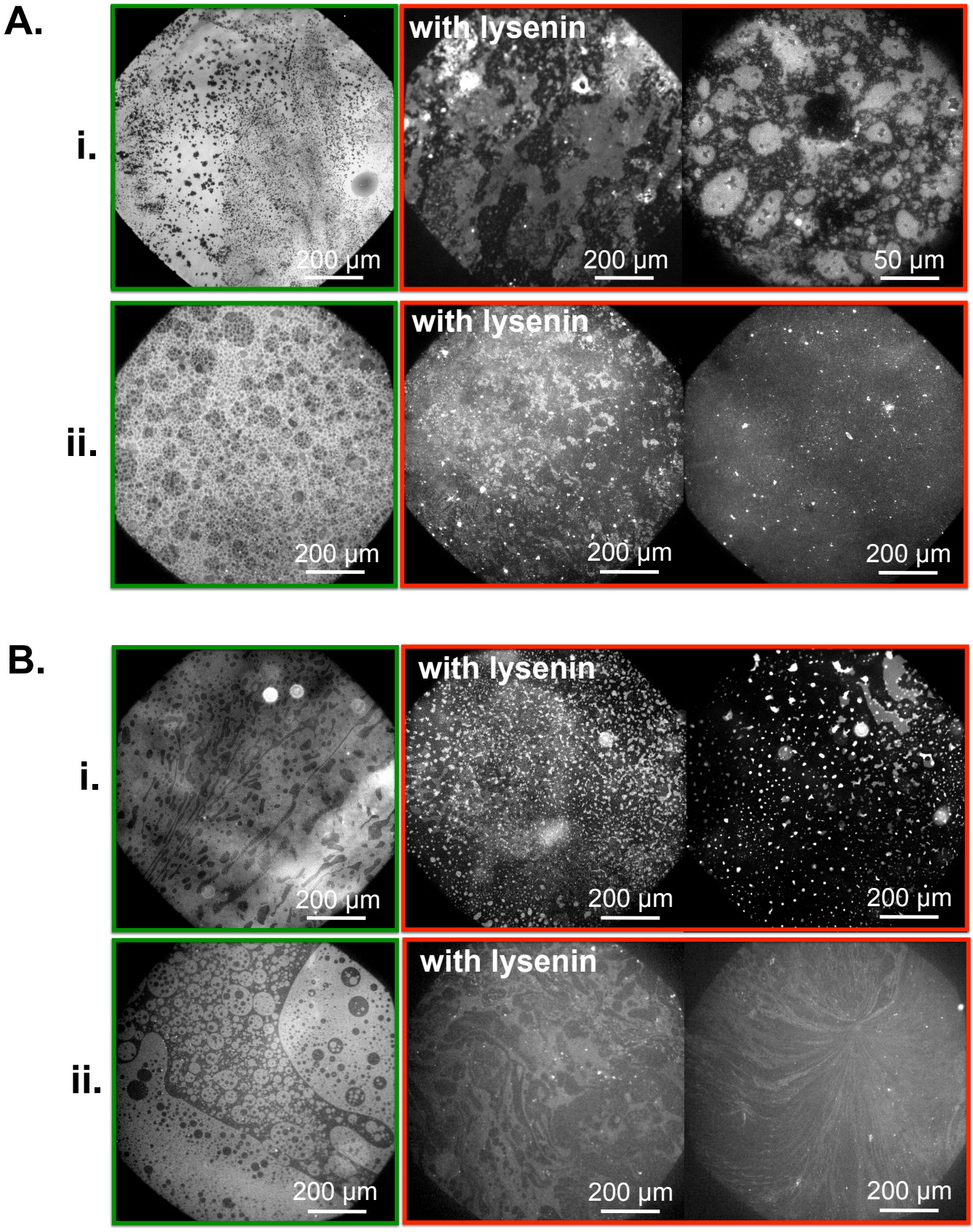

Figure S3. Fluorescence microscopy images of SM/Chol/DOPC (2:1:2) membrane including **(A)** 1 mol% 18:1 NBD-PE and **(B)** 1 mol% 22 NBD-Chol. (i) and (ii) refer to the experimental sets conducted under similar conditions. The two images of membrane with lysenin in each set were captured at different locations.

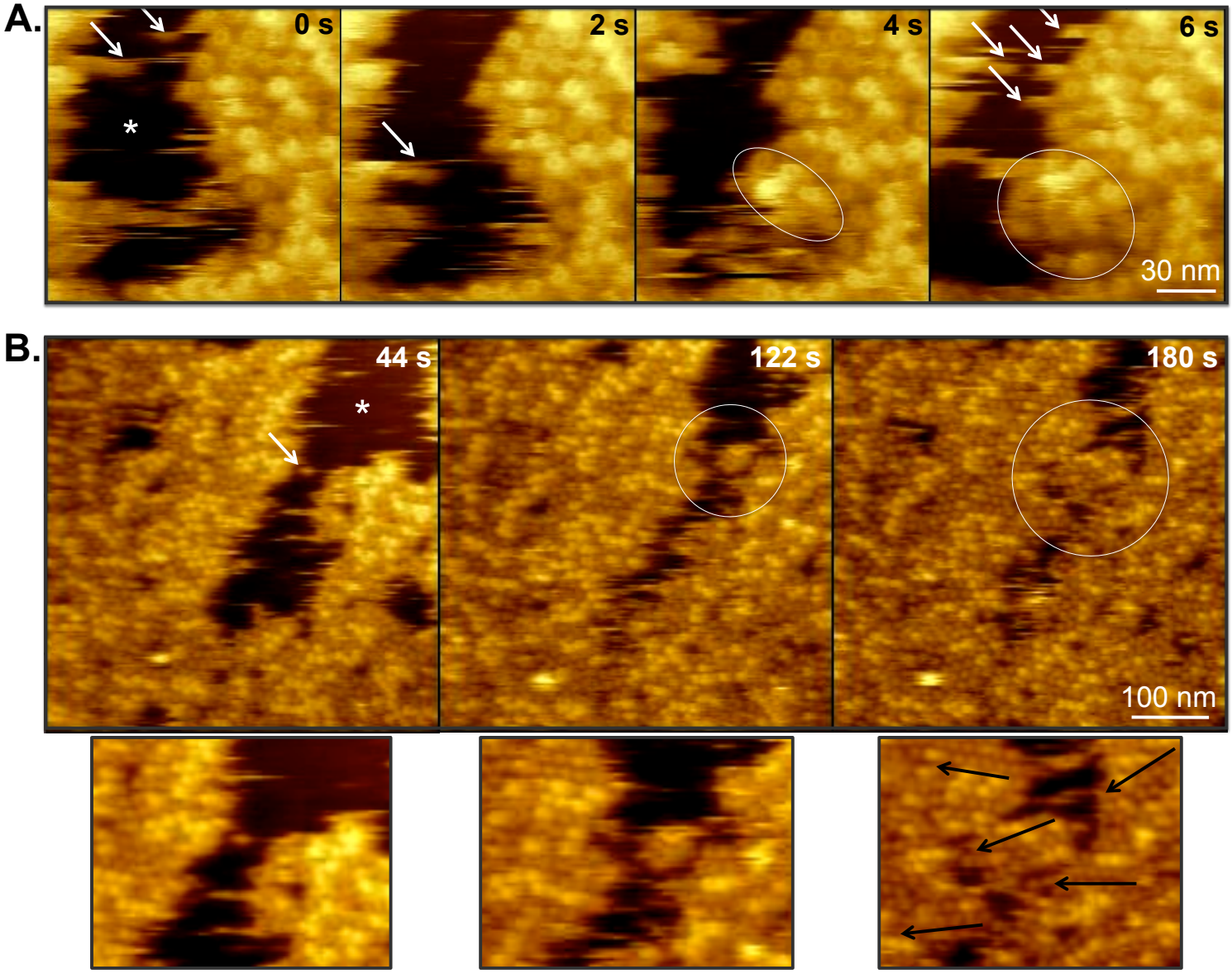

Figure S4. (A,B) AFM images showing the single oligomers (indicated by the white arrows) and the oligomers within the small hcp assemblies (marked by the circles). The asterisks denote the DOPC-rich phase. The black arrows show the direction of oligomer arrays.