

Supplementary Movie 1 | Membrane deformation induced by YidC: front view. This movie was generated from coarse-grained molecular dynamics (MD) simulation snapshots rendered in VMD (one frame per 1 ns), shown from the front view of the TMH 3/5 groove. A smoothing window of 10 frames was applied to all beads, and the video was set to 30 frames per second. The simulation time span corresponds to the first 1 μ s of simulation case #1. In the left panel, YidC is shown in van der Waals surface representation in dark gray, with the TMH 3/5 groove highlighted in orange. Phosphate groups of DPPC lipids are also shown as van der Waals surfaces; those within 1 nm of YidC are colored red, while the others are shown in pink with partial transparency. The right panel shows the same system with YidC hidden to clearly visualize the YidC-induced membrane deformation. For visual clarity, water molecules and ions are not shown in either panel.

Supplementary Movie 2 | Membrane deformation induced by YidC: side view. This movie was generated from coarse-grained molecular dynamics (MD) simulation snapshots rendered in VMD (one frame per 1 ns), shown from the side view of the TMH 3/5 groove. The side-view plane lies between TMH 3 and 5 to clearly visualize the YidC-induced membrane deformation within the structural groove. The molecular trajectory and all visualization settings (e.g., color codes and molecular representations) are the same as in Supplementary Movie 1. The orange-colored segment indicates TMH 3.