

Description of additional supplementary files

Supplementary Movie 1. Molecular dynamics trajectory of the HCP ring, which revealed that the β -hairpins of the DI of HCP are prone to large-scale fluctuations resulting in conformations partially occluding the central pore. Proteins are colored according to their secondary structure (α helices - red, β -sheets - cyan, unstructured coil - magenta).

Supplementary Movie 2. Switching between two alternative salt bridges, D135- K140 and K140-E145, which stabilize the open and closed conformations of the central HCP pore, respectively, as observed in the molecular dynamics simulation of the HCP ring. The relevant amino acid residues in two neighboring protomers of the HCP ring (colored cyan and magenta) are shown.

Supplementary Movie 3. Example tomogram of DT57C.

Supplementary Movie 4. Animation of the collective motion corresponding to the first principal component derived from the MD simulation of the LtfA-LtfC-TTMP complex.