

SI Guide

Supplementary Information contains 3 Supplementary Figures, 4 Supplementary Tables and 1 Supplementary Video.

-Supplementary Figure 1: SDS-PAGE characterization of RhuA mutants (tiff graphic)

-Supplementary Figure 2: ESI-MS characterization of RhuA mutants (tiff graphic)

-Supplementary Figure 3: Thermal and organic-solvent stability of C98 RhuA crystals, monitored by TEM (tiff graphic)

-Supplementary Table 1: List of primers used in constructing site-directed mutants of RhuA using C98 RhuA as a base (Word file)

-Supplementary Table 2: Amino acid sequences of RhuA variants (Word file)

-Supplementary Table 3: Molecular masses of RhuA mutants (Word file)

-Supplementary Table 4: Symmetry analysis for the 2D lattices of RhuA variants (Word file)

-Supplementary Video 1: A video simulating the lattice motion between the fully open and the fully closed states of the 2D C98 RhuA lattices. This video was generated starting from the TEM snapshots of the seven conformational states (I-VII) (Fig. 3a) as described in Methods. All projected density images were rescaled to include the same field of view. Twenty four intermediate image frames were created between each pair in the sequence by pseudo-morphing, using the program *convert* from the software suite ImageMagick®. The final video was made with *ffmpeg* (<http://www.ffmpeg.org>) by combining the images as frames.

(QuickTime movie (.mov) 61 kb, H264 compression)