

## Supplementary Data

Figures with the mixing time dependence of  $R2_1^1$  spectra of 1,3- $^{13}\text{C}$ -glycerol CAP-Gly and 2- $^{13}\text{C}$ -glycerol CAP-Gly; comparison of backbone torsion angles  $\Psi$  and  $\Phi$  derived by TALOS+ with those from X-ray structure 2HQH and with those from the average MAS NMR structures; the B-factor of amide N for each residue of X-ray structures (3E2U, 2HQH, and 2HKQ); 2D NCA spectra of 2- $^{13}\text{C}$ -glycerol CAP-Gly illustrating the presence of two conformers in the vicinity of A45; the amino acid sequences for the CAP-Gly domain of p150<sup>Glued</sup> for the 3D structures deposited on PDB; a table summarizing the structure calculation procedures; a table of solid-state chemical shifts of free CAP-Gly; a table of solid-state chemical shifts of CAP-Gly in complex with EB1; summary of the CAP-Gly structure quality validation.