

**Supplemental Figure 1.** Diffraction data from liprin- $\beta$ 2 coiled-coil crystal was highly anisotropic. (A) A representative  $1^\circ$  oscillation x-ray diffraction image. The resolution of several diffraction spots are indicated to show the non-uniform decay in diffraction intensity. (B) A graph showing the F/sigma versus the resolution for each reciprocal axis for the entire merged data set. The diffraction intensity is significantly weaker along the  $a^*$  reciprocal axis. This graph was created using the Diffraction Anisotropy Server: <http://services.mbi.ucla.edu/anisoscale/>.<sup>27</sup> The Wilson B-factor was found to be  $32.8 \text{ \AA}^2$  by Ctruncate prior to the anisotropy correction.

**Supplemental Figure 2.** Comparison of the electron density maps (A) prior to the anisotropy correction (R/Rfree = 0.3264/0.3766; rmsbond =  $0.0240 \text{ \AA}$ ; rmsangle =  $1.893^\circ$ ), (B) immediately after the anisotropy correction (R/Rfree = 0.3068/0.3694; rmsbond = 0.0221; rmsangle =  $1.890^\circ$ ), and (C) of the final map. The same isoleucine side-chain and a backbone carbonyl are indicated on each image to highlight differences in the quality of the electron density at these sites. All maps are contoured at  $1.0 \sigma$ .