

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: **HS-AFM single-molecule live imaging of CHD1WT**

The movie reveals the chromo domain, helicase/ATPase domain, and DNA-binding domain with globular morphologies, as well as intrinsically disordered regions at both the N- and C-termini and between the helicase/ATPase and DNA-binding domains. See Fig. 1e for a schematic representation. Scale bar, 10 nm.

File Name: Supplementary Movie 2

Description: **Live imaging of CHD1–Venus condensates undergoing deformation upon exposure to 1M NaCl in the droplet assay.**

Scale bar, 10 nm. Related to Supplementary Fig. 4e.

File Name: Supplementary Movie 3

Description: **Live imaging of CHD1–Venus condensates showing transformation and fusion events in the droplet assay.**

Scale bar, 10 nm. Related to Supplementary Fig. 4f.

File Name: Supplementary Movie 4

Description: **Confocal live imaging of Spot-FRAP analysis on CHD1WT–Venus KI HeLa cells.**

Scale bar, 5 μ m. Related to Fig. 2e.